JAN 4, 1965

NOTES 1-4-65 BELEW

B 1/6

F-1 ENGINE

F-1 Engine Number F-2008 was delivered to MSFC on December 26, 1964, and is currently in Qual Lab undergoing receiving inspection. F-2003 and F-2007 have completed hot-fire acceptance testing and are currently undergoing second electrical and mechanical inspection at Canoga Park. F-2007 is scheduled for delivery to MSFC by the "Pregnant Guppy" on January 4, 1965.

F-1 Engine Mockup FM-105 is scheduled for delivery to Michoud on January 11, 1965. This mockup engine completes the deliverable mockup requirements.

J-2 ENGINE

Production engine 2013 has been repaired and will resume acceptance testing December 30, 1964. This is a flight configuration engine and is scheduled for S-IVB Battleship testing.

The second set of redesigned fuel turbopump turbine wheels have been dye-penetrant inspected after accumulating 2,260 seconds of test time. This inspection revealed no cracks or other indication of failure. The wheels will be reinstalled in the fuel turbopump and testing will continue to further verify the design.

Modernization of test stand VTS-3 has been completed. It is anticipated that the initial reactivation test on this stand will be accomplished January 21, 1965.

Engine 2004 was delivered to S&ID last week for use in their Battleship test program. This is the third engine delivered toward the five-engine cluster.

RL10 ENGINE

The procurement plan for continued RL10 development and flight support for the two year period, October 1, 1965, thru September 30, 1967, has been prepared and is now in the approval cycle. It is expected that this procurement plan, which is based on an incentive type contract, will be submitted to Headquarters early in January. This plan was initiated early to allow sufficient time for incentive contract negotiations.

H-1 ENGINE

Three of the SA-201 Engines have completed retrofit and hot-firing. These engines are in final inspection and are scheduled for shipment to Michoud this week. Two additional SA-201 Engines have completed retrofit and will be hot-fired today.

NOTES 1-4-65 CLINE

B 1/6

1. ENGINE FOR SPACE PROPULSION SYSTEM PROJECT (NAS8-14002) DELIVERED: The first RL-10A-3 Engine (P-641848) to be utilized in the Space Propulsion System Project has been delivered to the Boeing Company, Seattle, Washington. This project includes full-scale testing of flight type propulsion system to establish design criteria and provide data essential for the design of future space propulsion systems. The engine will be forwarded to Boeing's Boardman Test Facility, Boardman, Oregon. Engine cold flow tests are scheduled to be initiated in March 1965 and followed by familiarization hot firing tests in April 1965.

NOTES 1/4/65 CONSTAN

B 1/6

Negative report.

NOTES 1-4-65 DANNENBERG B1/6

Negative Report

B 1/6

NOTES 1-4-65 FORTUNE

1. Brief Review of 1964 - Twenty-six construction projects were completed at a cost of $12,490,000. Twenty-seven contracts are active in the amount of $87,465,000 with 4 others advertised. Forty-three procurement contracts are in process for over $12,000,000 not including Technical Systems. Looking over pictures of a year ago, the Lab and Engineering Building site was just being cleared; the Lock area was a big hole in the ground; S-II piles had been driven, but no cap poured; the S-IC excavation was only partially complete and in deep mire. Since then, we have accepted 12 completed facilities, find we still need the MTF Working Group to review proposed design and engineering changes and may form an Activation Task Force soon. Weidner, Hueter, Heimburg, Shepherd, Auter, Artley, and myself met on this ten days ago. We will present the details for your consideration in the near future. Hopefully we can have speedier actions from the Personnel Office in the next few months to fulfill our growing operational requirements. GE effort has been contained well within amounts previously negotiated. ✓

2. Busy Week at MTF - The President's Missle Sites Labor Committee, Gen. Welling, Gen. Wilhoit and various Corps of Engineers and Marshall representatives will meet here Tuesday to discuss the Project Stabilization Agreement, and encourage construction contractors to sign. Incidentally, Video which is Aetron's subcontractor for installing the Technical Systems is now signatory. Wednesday, we join the twelve other government activities on the Gulf Coast to hear our Regional Civil Service Commissioner, Hammond Smith, discuss the Equal Employment Opportunity program. Marion Kent and Art Sanderson will be down from MSFC. Thursday, University of Mississippi Dean Brenkert and Nobles are calling on us to discuss future establishment of graduate educational efforts. (Mississippi State University asked to come down for the same thing, but had to be deferred to the following week.) Jerry McCall could not make it, but Jim Dowdy will be down to talk with them. Friday, Col. Gould, Advisor to the House Space Committee, Col. Barnett and Horton Webb will join us. ✓

NOTES 1/4/65 GEISSLER

B 1/6

Negative Report

NOTES 1-4-65 GRAU B 1/6

1. S-IU-8 INSTRUMENT UNIT CHECKOUT: Simulated Flight Test of S-IU-8 was completed December 29, 1964. Systems checkout is on schedule and the unit should be released to Manufacturing Engineering Laboratory January 7, 1965 for preparation for shipment.

2. PEGASUS: Tests on Flight Model "A" at the Valley Forge, Pennsylvania Vacuum Chamber were completed December 22, 1964. These tests consisted of only a light vibration test (enough to shake out the loose nuts and bolts) in the "Y" axis only, and a functional test under vacuum. No thermal tests were made.

3. SATURN V PROGRAM: The S-IC-S Thrust Structure has been received from Boeing, Michoud. Enroute, the protective cover was blown off; however, upon arrival, no visual damage was noted and analysis of entrapped water gave no indication of salt.

   Receiving inspection test of the first S-IC-T engine has been completed. Five electrical and six mechanical defects were found which will require minor rework. Mechanical defects consisted mainly of seal and weld leakages.

4. ULTRASONIC TESTING: An experimental ultrasonic test scan was made on the "Y" ring to bulkhead weld to determine the conditions that would be encountered in production as compared with those in the laboratory. Two scans were made of the weld; one following the X ray as it was being made, resulting in intermittent scans of each area, and one continuous scan around the circumference. The test was considered very successful inasmuch as some spot correlations were made with X ray and indications compared favorably, and testing time was minimized compared to X ray or manual inspection.

NOTES 1/4/65 HAEUSSERMANN B 1/6

1. IU FS-500 ENVIRONMENTAL TESTING: Negotiations between contract people from DAC (Humphrey) and MSFC (Law) are in preparation to define DAC's effort at their Huntington Beach Space Chamber. Astrionics Laboratory is determined to keep the total price below $2.5 million as estimated 1 1/2 years ago, despite the fact that considerably higher overhead cost and reliability figures are now applicable.

DAC's first firm proposal (10/1/64) asking for $3.75 million was rejected as unrealistic and a second issue (12/7/64) estimated the price as $3.2 million. A shopping list was attached to the December issue to reduce the price an additional amount. A thorough technical analysis of the DAC proposal was made and MSFC contract people have been provided with a detailed breakdown of the job to be done in reference to DAC nomenclature. Our estimate put the cost of DAC's total effort below $2.5 million.

The tests in the DAC Space Chamber are scheduled for fall 1965 (geared to first orbital flight 203).

A time pressure is on the program, and we hope that a contract with DAC can be signed soon. If not, a schedule slip is unavoidable.

2. AB-5 HYDRODYNAMIC SPIN BEARING, INTEGRAL GAS PUMP GYRO: A meeting was held with the Honeywell engineers at Minneapolis to discuss the test program and results of the ceramic AB-5 hydrodynamic spin bearing, integral gas pump gyro. Evaluation of test results revealed an unaccountable error greater than one degree per hour. All tests were stopped and a program plan established for alignment of the test stands. It was disappointing to discover that Honeywell had proceeded to the extent of extreme gyro drift testing without due consideration of test stand alignment.

NOTES 1/4/65 HEIMBURG

B 1/6

NO NOTES.

B 1/6

NOTES 1/4/65 HOELZER

1. PERSONNEL: The Position Classification Survey for the Computation Laboratory began on January 4, 1965. The first group of 21 completed job position records will be turned over to Personnel on January 15, 1965. The schedule for completion of the Laboratory is March 26, 1965, and though an exceptionally tight schedule, it is expected to be met by this Laboratory.

2. FACILITIES: The addition to the Computation Laboratory has been practically completed. "A" wing has been occupied, "B" wing has been partially occupied and it is expected that all three wings will be occupied before the end of January. This will not solve all of the physical space problems for the Computation Laboratory, but will certainly be a help.

3. ADVANCED ATOLL: Computation Laboratory's in-house support contractor (GE-Phoenix) has issued a purchase order to Mesa Scientific Corporation for the analysis and design of the ATOLL II language and translator. The effective starting date was December 31, 1964, and the completion date is approximately May 1, 1965. It is planned that the implementation (programming and coding) will be done in-house by GE personnel.

4. COMPUTATION LANGUAGE FOR TRAJECTORY CALCULATIONS: Computation Laboratory has recently issued an RFQ for the design and development of a language to facilitate programming and coding of vehicle trajectory calculations. Bids have been received from ten companies to date, and are being technically evaluated. The purpose of this research is to provide modules which can be used as building blocks for the construction of trajectory programs.

NOTES 1/4/65 JAMES B 1/6

S-IB STAGE STRUCTURAL LOADS: The problem associated with the new structural loads is resolved as follows: S-IB-3 design will meet the new loads with a factor of safety of 1.25 (unmanned); S-IB-4 will meet the new loads with a factor of safety of 1.40 by applying a fix to the existing ring frame of the 105" tank with no schedule slip; and S-IB-5 and subs will meet the new loads with a factor of safety of 1.40 by applying an "in-line" fix to the ring frame at Chance-Vought when the 105" tank is fabricated. ✓

S-IV-10: Reference Grau's 12/14/64 Notes regarding desiccant leakage in LH_2 chilldown ducts. This leakage required the replacement of two engines. Spare engines were available at SACTO. Changing these engines has caused no delay in the S-IV-10 schedule. Static test is still scheduled for January 20. ✓

PEGASUS: The Pegasus "A" Spacecraft was delivered to Kennedy Space Center by Pregnant Guppy on December 29, 1964. Inclement weather, which grounded the aircraft, resulted in a six-day delay in making this shipment. After arrival at KSC, the Spacecraft was taken to Hangar D and mounted on the Wing Deployment Fixture. During preliminary tests, it was discovered that the motor gear box had been damaged and would not deploy the wings. A thorough investigation is being conducted to determine when and how the damage occurred and what remedial action is to be taken. A spare is available and replacement is being made. The damaged unit will be repaired and placed in spare status. The crew is continuing to balance the system on the deployment fixture preparatory to full scale formal systems tests. ✓

TABAKA STUDY: I tend to agree with Dr. Haeussermann's note on 12/28/64, i.e., that the Tabaka system is a lot of work for the line organizations. It further delays personnel actions I have been trying to accomplish for over a year and I for one cannot see the beneficial results. I am sure that everyone realizes that the Tabaka activity and the Headquarters action on average grades have essentially stopped all needed personnel actions. Harry F41

PEGASUS: There is no known problem on the Pegasus except for possible difficulties with OART on the false data problem. I personally doubt that any such problem can be proven to exist, but OART is putting us through all possible exercises in the meantime. Milt Ames and one of three investigating groups now operating will be here on January 11-12. ✓

Attachment #1: NOTES 12/14/64 Grau to Dr. von Braun only.

NOTES 12-14-64 GRAU

D 1/6

1. S-IU-8 INSTRUMENT UNIT CHECKOUT: There has been some delay in checkout of the S-IU-8 Instrument Unit due to non-availability of the F-6 Telemetry Assembly and problems with the RCA-110 Drum Memory. Checkout is now progressing satisfactorily, however, and lost schedule time will be recovered.

2. S-IV PROGRAM: The S-IV-8 stage is undergoing post-static checkout in the Engineering and Development Building at Sacramento. The S-IV-10 stage is in the test stand at Sacramento undergoing preparations for static test. A dessicant sack ruptured in the chilldown ducts, deposited dessicant material in two of the engines on this stage. The engines will be replaced by spares. DAC estimates about ten days for this change, however; parallel work will continue and only two or three days schedule time should be involved in the incident.

3. S-IVB PROGRAM: The S-IVB Battleship was static fired at Sacramento on December 9 for a duration of 50 seconds. No fuel pump stall was indicated as in the 10 second firing. One hot spot was noted in the flame bucket, but further investigation will be necessary to determine the extent of this problem. If review of data and other considerations permit, a full duration (150 seconds) firing will be conducted December 15, 1964.

4. F-1 ENGINE PROGRAM: F-1 Engines 2007 and 2008 are undergoing final acceptance checkout at Canoga Park. It is of note that only one Material Review action was written against Engine 2007 and no Material Review actions were written against Engine 2008 during the acceptance test at Edwards. Engines 2004 and 2006 are undergoing FRT at Edwards and the progress is satisfactory. After the fifth firing, erosion was noted on the Injector of 2004 at a point near the center ring to baffle mating point. The injector was removed and inspection indicated that passages through the baffle were clogged resulting in a loss of coolant at the point eroded. A replacement injector was installed and testing is continuing.

5. APOLLO RELIABILITY AND QUALITY ASSURANCE PUBLICATION NPC 500-5: During the visit of Mr. George Lemke and Dr. Harvey Hall (MSF Reliability and Quality Assurance Office) on December 10, agreement was reached concerning the format of the MSFC plan for implementation of this document. A draft of the MSFC plan will be available by January 15, 1965. Results of an impact study of the reporting requirements of NPC 500-5 on the reliability operations at MSFC were presented and indicate that the requirements are excessive and that under the existing capability, not more than 5-10% of the information requirements can be met. The visitors agreed to reconsider and detail negotiation will begin early in January. However, although the requirements are excessive, a large gap exists between the present capability and a practical information requirement which needs to be closed in MSFC. Those who manage resources in the Center have to keep this high on the priority list. You will hear about this more in 1965.

Attachment #1

NOTES 1-4-65 Koelle

3 1/6

No NOTES this week.

NOTES 1/4/65 KUERS

B 1/6

Negative reply.

B 1/6

NOTES 1/4/65 MAUS

1. CONGRESSIONAL HEARINGS - A strong probability exists that the Manned Space Flight Subcommittee of the House (Olin B. Teague, Chairman) will conduct field hearings at the MSF Centers in late January or early February in a manner similar to the 1964 hearings. Bob Freitag has called a one-day meeting to be held in MSF tomorrow January 5, to coordinate requirements and preparations for the FY65 field center Congressional Hearings. Ray Kline will attend.

2. TRAINING FOR PROJECT/CONTRACT MANAGERS IN FINANCIAL MANAGEMENT - At Headquarters' request, Chris Andressen will go to Washington on January 29, 1965, for the final review of the training course on Financial Management which is being readied for presentation to NASA project/contract management personnel.

3. APOLLO FLIGHT MISSION ASSIGNMENTS DIRECTIVE - We have received an official change to the Apollo Mission Assignments Directive. This change incorporates the LH$_2$ experiment on SA 203; SA 204 with spacecraft 012, now becomes the first possible manned flight in the Apollo program. This change also assigns a "LEM alone" flight to SA 206. An analysis of impact of the document is underway in conjunction with IO and R&DO.

4. NEW PROJECT STARTS - The NASA FY66 Budget request is being finalized for inclusion in the President's budget. The attendant effects on the starting of the Saturn IB/Centaur, Voyager, Cislunar Pegasus and AES Projects are now becoming firm. We are preparing a detailed status summary for you.

B 1/6

NOTES 1/4/65 McCartney

1. TRANSFER OF CONTRACT ADMINISTRATION FOR MECHANICAL GROUND SUPPORT EQUIPMENT (MGSE) TO I.O.: Agreement has been reached between R&D Operations (Weidner) and I.O. (O'Connor) to amend the Boeing Contract to extend support to P&VE for MGSE until June 30, 1965. Subsequent to June 30, 1965, this effort will be provided under Boeing's Prime Mission Contract. As a part of this action, I.O. has agreed to assume cognizance of ten MGSE Contracts now under jurisdiction of P&VE. The necessary administrative coordination for the transfer of these contracts has been discussed with Buckner and Hirsch.

2. FY-66 R&D OPERATIONS' BUDGET LIMITATIONS: I.O. has requested R&D Operations to perform a critical review of FY-66 budget forecasts and has recommended a reduction of approximately 27% in our present forecasts, as follows:

	R&D Opns Submission	I.O. Proposed Ceilings
Saturn I	$ 659,000	$ 1,100,000
Saturn IB	44,680,000	34,000,000
Saturn V	185,611,000	135,000,000
Engine Dev.	2,382,000	462,000
Total	$233,332,000	$170,562,000

Hermann Weidner
Let's discuss impact B

This proposal is being considered as to impact on R&D Operations and recommendations should be finalized by the last week in January.

3. VISIT OF THE PRESIDENT'S MISSILE SITES LABOR COMMISSION: R&D Operations is coordinating internal arrangements for the January 6 visit of Commission representatives. Captain Loeffler, Director of NASA Special Operations, and twelve Corps of Engineers representatives, headed by General Wilhoyt, will tour ME, P&VE, and TEST during the visit.

B 1/6

NOTES 1/4/65 RUDOLPH

1. Presidential Scientific Advisory Committee (PSAC) Meeting at S&ID/NAA on January 11-12, 1965 - General Phillips has requested a meeting in Houston, tomorrow, January 5, 1965, for a dry run of the total PSAC presentation which will include personnel from Headquarters, MSFC, MSC and S&ID/NAA. Mr. J. W. Moody, Chief, Reliability and Quality Office and Mr. E. L. Field, Acting Manager, S-II Stage Office, will make the presentations for MSFC. Dry runs of the MSFC presentations will be made today, January 4, 1965 at 10:00 am.

2. S-II Test Program Assessment - At the request of General Phillips, we are reviewing the overall S-II test program prior to the presentation to PSAC at NAA on January 11-12, 1965. During a meeting on December 23, 1964, representatives from MSF Test Office submitted certain questions, the answers to which General Phillips needs prior to his participation in the PSAC presentation. General Phillips' foremost question concerns the feasibility of eliminating the All Systems Stage. In a subsequent meeting on December 24, 1964, with Colonel O'Connor, the requested review was discussed and Colonel O'Connor established the following guidelines for supplying information:

a. Basis for NAA presentation to PSAC is existing S-II test program (including the All Systems Test).

b. Advise MSF (John Disher) that information to be provided is cursory due to the time allowed and is not adequate to affect major changes at this time.

c. Requested information relating to program status, known problem areas, future program considerations, etc., will be provided to MSF on Tuesday, January 5, 1965.

NOTES-1-4-65-SHEPHERD B 1/6

FY-66 CofF Budget: (Reference NOTES 12-7-64-SHEPHERD, copy attached) Word has been received by telephone from MSF that the Various Locations projects has been increased from $5.0M to $6.019M. Values assigned to the four projects in this category are:

	MSF Action 12-22-64	MSF Action 12-28-64
Facilities for S-IVB	-0-	-0-
Facilities for F-I	1,493.0	1,893.0
Facilities for J-2	1,707.0	2,436.2
Facilities for S-II	1,303.0	1,690.0
	4,503.0	6,019.2

The earlier BOB action cut our Various Locations to $5.0M and left it to NASA to prorate the $5.0M among the Various projects. MSF made the prorations as shown in the above table. No definite impact can be predicted at this time on the F-I, J-2 and S-II programs. These amounts are, however, lower than the most likely level of effort, and if inadequate, will have to be supplemented from some other source. Our primary concern is the deletion of the facilities for the S-IVB program. A requirement for any major S-IVB facilities may necessitate statutory reprogramming of funds which would require approval of the Congressional Committees irrespective of the source of funds (CofF or R&D). This procedure takes up to 30 days by the Committee plus administrative time in Headquarters.

Two factors which minimize the impact of the deletion of the S-IVB project are:

1. Of the $10.7M authorized in FY-65 for S-IVB facilities, only $5.4M is required. This decrease is due primarily to the change from a third test stand (Beta-2) to the Vertical Checkout Facility. With $5.3M authority available, a requirement could be quickly covered if sufficient CofF FY-65 funds could be obtained.

2. The Industrial Opers. S-IVB Office stated that they had budgeted $5.0M R&D in FY-66 for "facilities type requirements", which they would rather not "spot-light" to Headquarters at this time. Further, in their opinion, a delay of 60 or more days to obtain Congressional approval of a statutory reporgramming action, would not be critical.

Although it is inconsistent to presume that the engines and the S-II stage will have requirements while the S-IVB will have none, Headquarters has submitted the budget to BOB on this basis.

Shep

I don't quite understand this S-IVB facility business. Please explain (½ page) B

Attachment (Dr. von Braun's copy only)

NOTES 1-4-65 Stuhlinger B 1/6

1. AES RADIO ASTRONOMY PROGRAM: NASA Headquarters has arranged for a meeting on January 14 between members of RPL and the National Bureau of Standards in Boulder, Colorado, to discuss our plans for the Radio Astronomy portion of AES scientific activities. This is in line with our desire to consult with outside agencies in the areas of optical and radio astronomy, as mentioned in NOTES 12-21-64, Stuhlinger. ✓

2. FY-65 OART REDUCTION: OART has withheld, until March 31, 1965, $1 million from this Center's Space Vehicle Systems Program (this is part of the OART program) to cover a possible overrun in the Pegasus Project. This is a decrease in this specific program from $3.054 to $2.054 million. Each laboratory affected by this reduction has been advised by memorandum. ✓

3. ART/SRT PROGRAM STATUS: The status of the FY-65 ART/SRT Program under the cognizance of RPL is, as of January 4, 1965, as follows:

	ANNUAL PLAN	AUTHORIZED	PROCESSED TO FMO	OBLIGATED BY P&C
OART	8,779,000	6,954,000	4,928,666	1,951,237
OMSF	19,000,000	10,777,000	4,511,551	99,254
OSSA	475,000	475,000	18,671	0
	28,254,000	18,206,000	9,458,888	2,050,491

✓

4. THIRD ION ENGINE SPACE TEST: The Air Force tested another ion engine, built by Electro-Optical Systems, with full success on December 22. A 90 day orbital test, powered by a SNAP 10A, is planned for next spring. ✓

Jan 11, 1965

NOTES 1-11-65 BELEW B 1/11

F-1 ENGINE

Investigation of the alcohol-water prefill lead as a solution to injector cracking continues. It leaves no salt deposit as does sodium nitrite prefill but we are experiencing pre-mainstage combustion disturbances (before MFV opens).

Engine F-2007 arrived at Huntsville on January 4, 1965. Engine F-2009 for S-IC-T stage completed acceptance testing December 30, 1964, and is now in final inspection prior to acceptance.

RL10 ENGINE

We have made plans to allocate the dual-engine (Centaur-Simulation) test stand at Pratt & Whitney for testing in support of the Saturn IB/Centaur Program as required during FY '66. Differences between the Atlas-Centaur and the Saturn IB/Centaur in inlet conditions, acceleration-time history, vibration, chilldown, aft compartment environment, and separation control requirements as they affect engine operation will be investigated on this test stand. This work is being worked in as an integral part of the RL10 development and flight support effort.

L.B. Does our very meager Centaur budget provide funds for this? B

H-1 ENGINE

Six of the SA-201 engines have completed retrofit and hot-firing at Neosho. Two more have been retrofitted and will be hot-fired tomorrow. Four of these engines will be shipped to Michoud during the week of January 11; and the other four will be shipped the following week.

The 200K pre-qualification engine is being installed in the test stand at Santa Susana and testing will begin next week.

J-2 ENGINE

R&D engine J015 sustained damage January 6, 1965, when the gas generator combustor body failed. This engine has 4,886 seconds of accumulated run duration. A new gas generator and fuel turbine manifold will be installed and engine testing will continue.

The PFRT engine J2008 is presently being disassembled at Rocketdyne and the NASA hardware review is scheduled for the last week of February.

A series of ten tests was conducted utilizing helium to precondition the thrust chamber. Data are being evaluated and will be forwarded to the stage contractor when available to be correlated with those of similar tests being conducted at DAC/SACTO to define S-IVB stage start requirements.

GENERAL

I understand that the M-1 engine program will be substantially reduced as a result of current economies within NASA. It appears that these reductions will tend further to put this effort into a technology category.

L.B. That's what I hear, too. B

NOTES 1-11-65 CLINE

B 1/11

1. SATURN IB/MINUTEMAN PROGRAM: A presentation on Part I of the Saturn IB/Minuteman program definition phase will be conducted in the Director's Conference Room, Building 4200, at 9:00 a.m., 1-19-65. ✓

Fred

If possible, we should keep one S-IV for posteriority. There is great demand!

B

2. FULL-SCALE EXPLOSIVE TESTS WITH S-IV VEHICLES: A full-scale explosive hazard test has been scheduled for this spring using the S-IV Hydrostatic/Dynamics vehicle. The possibility of a second full-scale test using the S-IV Dynamics/Facilities vehicle is being investigated. Cost of running this additional test should be comparatively low, not only because facility modifications will have been made on the first, but also the Facilities vehicle is in much more usable condition than the Hydrostatic vehicle.

Where? When?

Results obtained from the two full-scale instrumented tests, together with rough indications obtained from the post mortem examination of damage resulting from the S-IV All Systems Vehicle indicant, will constitute a significant body of data which, in conjunction with the results of smaller scale tests, should permit establishing adequate and realistic siting criteria for LOX/LH_2 vehicles. ✓

3. F-1 ENGINE PREFILL UNIT: A problem concerning a possible change in the media used by the S-IC inert prefill unit to fill the F-1 engine thrust chamber jackets is being coordinated with Kennedy Space Center. This Laboratory is considering the use of an alcohol solution as a prefill media, rather than sodium nitrite, contingent upon the results of current tests. A recent addition of insulation of the F-1 engines is causing the sodium nitrite solution to freeze and deposit in the engine. ✓

4. MECHANICAL GROUND SUPPORT EQUIPMENT (MGSE): The negotiation of The Boeing Company mission contract for MGSE mission is progressing satisfactorily. Industrial Operations' Contracts Office issued an interim commitment letter to The Boeing Company for effort expended in this area prior to final signature of the contract. ✓

NOTES 1/11/65 CONSTAN

B 1/11

1. VISIT OF COLONEL GOULD

On January 7, 1965, Colonel Harold A. Gould, Technical Consultant to the Science and Astronautics Committee, House of Representatives, visited MSFC/Michoud Operations. He was given an orientation directed toward plant maintenance and at the conclusion of the briefing was given a tour of the Michoud plant and the Slidell Computer Operations Office.

2. S-I/IB

Ball Roter Valve Problem. Chrysler's investigation into the Parker ball roter valve problem is still in progress. As of January 5, 1965, 58 valves had been checked and 23 found defective, primarily by contamination of bronze and aluminum particles. All valves checked are for S-IB-1 and subsequent, except for 3. No decision has been made to check the valves installed on S-I-8 and S-I-10. Three representatives of Parker are at Michoud participating in the investigation.

3. VISIT OF MAJOR GENERAL WELLING

Major General A. C. Welling, Division Engineer, South Atlantic Division, U. S. Corps of Engineers, Atlanta, Georgia, visited the MSFC/Michoud Operations on January 6, 1965. A briefing was conducted by Dr. Constan and following the briefing, General Welling was given a tour of the S-I/IB and S-IC areas of the facility.

4. S-IC-F MOCKUP F-1 ENGINE

All necessary ground support equipment has arrived in preparation for receiving FM-105 (S-IC-F Mockup F-1 Engine). A load test of the Cargo Lift Trailer was performed successfully on January 7, which completed Boeing's preparation for receival of the engine. Scheduled arrival of the engine at Alvin Callender Field is currently January 13, 1965, with unloading operations and transportation to the plant scheduled for January 14.

NOTES 1-11-65 DANNENBERG B 1/11

1. Contractor suggested experiments - Among experiments suggested to us by Douglas are the following:
   1. In-flight Determination of Space Vehicle Electrical Charge
   2. Orbital Propellant Transfer
   3. Space Optics Clouding by Combustion and Outgassing !

2. S-IC Engineering Change Management - A joint IO/R&DOperations meeting was held to analyze the impact of open changes on the schedule of S-IC-1 (501).

It was agreed that an engineering review of all changes in process or approved would be held with Boeing to determine the disposition of these changes based on dollar and schedule impact on S-IC-1. The meeting will be held if possible before the SFC quarterly review on 1-27-65.

3. Configuration Management - The S-IB Configuration Control Board has been established; board members have been appointed,and the R&D Operations Configuration Coordination Office is implementing the analysis for resolution of open changes.

4. Apollo ICD's - To improve the Repository operations, the feasibility of microfilm usage instead of full size reproducibles is being studied.

A summary of the Apollo ICD Repository operations was furnished to you before the 12-21-64 Program Review at the Cape. No major changes have occurred since, but updated reports from MSFC Panel chairmen are beginning to come in. All reports should be in by 1-15-65.

NOTES 1-11-65 FORTUNE

B 1/11

1. Ambiguities in Project Stabilization Agreement - were pointed out by contractors to President's Missile Sites Labor Commission Tuesday. After Corps of Engineers/MTO presentations, and tour, Dr. Dunlop, Julius Kuczma and W. E. Simkin, heard leading construction company spokesmen explain why they have not signed PSA. Semantics, disagreements in interpretation, differences between international and local union practices and company representatives vs Association of General Contractors, centered around four areas: (a) whether "to curtail" means work has already been started, i.e., do they give 2 or 4 hour pay credit when workers report on a rainy day, (b) shift vs overtime - 15 cents or time and a half in certain circumstances, (c) travel pay ($2.00 per day PSA, $3.00 by local agreement) and (d) do prime contractors have to employ union subs. (We have said no but the one asphalt contractor in Hancock County is non-union, and Morrison Knudsen fears trouble if they use him. Fuller, construction prime, complained about GE non-union subcontractors in the E, I and M Laboratory, also.) Dr. Dunlop indicated he would like to clarify the issues. Our good labor record seems to rest more on how the constructors get along with the locals than on the PSA.

2. Civil Service Commission Inspection Findings on Equal Employment Opportunity Practices - expected to be satisfactory. Team Chief, Ed Callaghan, indicated MSFC will get pat on back for initiating Regional Planning MDTA and Cooperative Student Programs for MTO. Marion Kent and Art Sanderson helped me greatly Thursday during the Inspection.

3. "Ole Miss" and Mississippi State Compete for Graduate Education - Both universities have indicated desire to furnish us "resident" capabilities for advanced educational courses whenever needed. Jim Dowdy and I think the Board of Trustees of the Institutes of Higher Learning of Mississippi should decide which school will provide the training. We saw no need for it before the Fall of 1966 but MacGregor of GE told me later they may arrange a bus to Tulane this coming Fall for would-be students.

BF
But maybe the PSA has the "unseen" advantage that none of the contractors who have not signed it, want to be the skunk in the garden party!
B

NOTES 1/11/65 GEISSLER

B 1/11

1. Saturn IB High Inclination Orbits: Re: your comments on Notes 12/14/64 Geissler, this subject, copy attached as enclosure. The payload for Saturn IB operational vehicles is 35,500 lbs to a 105 NM circular orbit launched 72° East of North. The 33,000 lb payload capability quoted was to a 100 NM circular orbit launched due east, and represented earlier vehicle characteristics. There are many differences between the Apollo vehicle characteristics and the characteristics used in the Lockheed study which was initiated in June 1964, before the latest vehicle changes, to assure a 35,500 lb payload, were made. The second comment re: a 14,000 lb payload into a 100 NM polar orbit is correct if range safety considerations are neglected. An answer to what payload can be injected into a polar orbit observing all range safety constraints will be discussed in a January 15 briefing to you. ✓

2. SA-9: Final propulsion system performance predictions for SA-9 are significantly higher than the preliminary predictions and result in an expected nominal S-IV propellant residual at cutoff of 1,275 lb. This is an increase of almost 500 lbs over predicted. In order to minimize risk of excessive payload tumbling due to residual venting in orbit, it was our intent to keep FPR close to minimum compatible with a two sigma performance variation. This minimum is 700 lbs. In view of flight results on SA-7, orbital venting of the above new residual may not constitute a major risk. However, if nominal residual is to be reduced by 500 lbs, there are in principle the following five alternatives: (1) Raise insertion altitude by changing guidance terminal conditions; (2) reshape trajectory by changing entire flight program; (3) decrease S-I stage propellant loading; (4) change S-I stage cutoff sequencing; and (5) decrease S-IV stage propellant loading. Preliminary investigations with ASTR and P&VE seem to rule out all our alternatives but (4). Upon completion of our analysis it may be necessary to request implementation of the S-I stage cut-off sequencing. ✓

3. Personnel Policies: The policies and the handling of personnel actions during the past months have hurt our team composition considerably and reduced the morale of the people to a very critical point. We have lost quite a number of good people in the GS-12 - 15 range to industry without being able to regulate losses. The pressure and concern of Washington Hq. about MSFC grade structure, has caused our management at MSFC to practically block all acquisitions of good applicants a long time before the official freeze came. I am convinced that MSFC cannot survive in a competitive field unless (a) drastic measures are taken to give the technical managers more help in overcoming the almost insurmountable odds against taking corrective actions for downgrading or removal of unsatisfactory personnel, and (b) unless the technical managers are given more freedom in judging the merit of individual cases (hirings & promotions). I believe the survey now being started (using the Tabaka system) is a step in the right direction, but without the two above-mentioned improvements, this could well be the final stage of a transition from a capable highly esteemed technical center, to a second rate outfit not capable of providing leadership in space flight development.

O.K.

To Harry This is the 3rd time I've read this in the NOTES, and at least the 15th time I've heard it in informal discussions. Please lay on a set of suitable meetings that permit us to come to grips with this most serious situation. B

Gilruth tells me he has the same trouble. We can't afford to ... nothing we can do ... If we have to take this to Mr Webb personally, I'm ready. B

NOTES 1-11-65 GRAU

B 1/11

1. S-IU-8 INSTRUMENT UNIT CHECKOUT: Checkout of the S-IU-8 Instrument Unit was completed and the Unit released to Manufacturing Engineering Laboratory January 8, 1965. Five Unsatisfactory Condition Reports were written on the Unit, three on the RF Systems, one on the Guidance Signal Processor and Guidance Computer, and one on an accelerometer cable.

2. S-IVB PROGRAM: The S-IV-D Dynamic Stage was shipped from Huntington Beach December 9, 1964, and arrived at MSFC January 4, 1965. The stage is presently located in Building 4708 undergoing receiving inspection and installation of hardware which was shipped loose.

3. APOLLO RELIABILITY AND QUALITY ASSURANCE PUBLICATION NPC 500-5: In response to your remark to paragraph 5 of the NOTES 12-14-64 GRAU (copy attached), I would like to suggest that we postpone a briefing until the reporting requirements problem has been settled with Mr. Lemke's office. We planned to start negotiations early this month but, upon request of Mr. Lemke and Dr. Hall, had to postpone this due to the necessary preparations for Dr. Golovin's visit to S&ID. Mr. Weidner agrees with this approach.

4. NAA IMPLEMENTATION OF DIGITAL EVENTS EVALUATORS (DEE): A review of the NAA firm cost proposal for implementation of the DEE was performed and detailed comments submitted to Industrial Operations. It is of interest that the firm cost was 1.9 million dollars compared to 3.2 million dollars in the quick reaction estimate (reference paragraph 2 of NOTES 12-7-64 GRAU attached). The review indicates that the total cost, above previous contract commitments, should be approximately one million dollars.

5. PEGASUS: Installation of Pegasus A into the Apollo Service Module (BP-16) for SA-9 is scheduled to begin on Monday, January 11, 1965, in hanger AF (Kennedy Space Center), with movement to the pad to take place later this week.

Attachment 1 (NOTES 12-7-64 GRAU) Copies to Dr. von Braun and Mr. Weidner
Attachment 2 (NOTES 12-14-64 GRAU) Copies to Dr. von Braun and Mr. Weidner

NOTES 1/11/65 HAEUSSERMANN B 1/11

1. TITAN-GEMINI ACTUATOR FAILURE: High side loads at engine ignition caused the actuator to see a force of approximately 40,000 pounds, three times the stall force of the actuator. The high pressure caused by this force caused the valve to lift from the actuator face, shearing two mounting ears on the valve. The fix is to use a stronger material for the valve housing and provide a porting from cylinder to the return to relieve high pressure surges.

The dynamic pressure-feedback principle employed on the Saturn stages would tend to relieve pressure surges such as those experienced on the Titan. However, each stage system is being reanalyzed to better predict the behavior in case extremely high side loads are experienced.

2. HYDRAULIC SUPPORT OF SATURN DYNAMIC TEST VEHICLE: Phase I is completed on suspension or support devices for the Saturn V dynamic test vehicle. The Boeing Company finished a preliminary design of a cable suspension featuring 1200 springs, 20 cables (3.5" Dia.), 20 actuators, and about 1.2 million dollars total cost. The Goodyear Aerospace Company completed fatigue tests and a design study of a membrane-type support, featuring 4 tire-like membranes, 4 flange-like hydrostatic bearings, 4 gas springs, and a total cost of approximately 0.63 million dollars. The Martin Company Baltimore finished a design on a hydraulic jack-type support, featuring 4 self-adjusting hydrostatic bearings, 4 frictionless guided pistons, 4 gas springs, and a total cost of approximately 0.69 million dollars.

It was decided to award a contract to The Martin Company because their design is the best technically and schedule-wise. The jack-type support can be readily analyzed, has no fatiguing components, has its natural frequencies above the test frequencies, has the lowest damping (required for S-II testing), and will generate only rebound forces of 20% above the vehicle weight in case of power or hydraulic pressure failure while the other devices could have caused a dynamic load factor of three. Machining tolerances were of some concern; however, tolerances of ±0.001 inches and radial gaps of 0.010 inches are still feasible as confirmed by ME and Mr. Angele.

3. FUEL CELL: The Allis-Chalmers fuel cell breadboard delivered to MSC, Houston, under our contract has exceeded 500 hours of operation to date.

NOTES 1/11/65 HEIMBURG

B 1/11

1. F-1 ENGINE:

Test TWF-042 was postponed from 1/8/65 to 1/11/65 due to contamination discovered during a swab check of the upper lox suction duct. (This swab check later proved to be in error.) Three tests of 120-second duration each are scheduled for the week of 1/11/65. The engine will be gimbaled during all of these tests.

2. S-IC TEST STAND:

"Shaking" tests have been completed to determine the natural frequency of the empty test stand. The lower spider for the holddown arm load test will be installed 1/11 or 1/12. We are going to start load testing approximately 1/18.

3. MTF WORKING GROUP:

Negotiations were completed on Friday, 1/8/65, for a contract with Aetron to cover installation of GSE for first MTF S-II Test Stand. Contract finalization is anticipated on or before 2/1/65.

NOTES 1-11-65 HOELZER

1. SLIDELL SIMULATION FACILITY: The two 231R-V computers which were delivered to Slidell in November have been completely checked out and accepted. Six analog computer consoles are now installed at Slidell, and one at Michoud.

2. TELEVISION GUIDANCE SIMULATOR: As a result of operation and testing of the electronic system for the Television Guidance Simulator, several improvements have been incorporated and a complete operational test has been performed. With the equipment immediately available the illusion of an earth-controlled, lunar landing is quite realistic. Further improvements are required in the quality of the slide transparencies, and in the analog computer program. Action is underway to accomplish both these objectives and allow the system to become fully operational in the near future.

3. P&VE DATA REDUCTION SERVICES: A potential problem area exists in the Vibration Analysis work performed for P&VE, due to a recent relocation of Computation Laboratory equipment and personnel from the HIC Building to Building 4663. Every effort is being made to insure a smooth transition and minimize the disruptions that are expected to exist due to the loss of close personal contact.

4. CENTRAL TIMING FACILITY: Recent additions and relocation of the Central Timing Facility are expected to provide more reliable and versatile service to the users of this equipment.

5. WEATHER PROGRAM FOR LAUNCH DECISIONS: A new computer program for determining weather Go/No-Go launch decisions has recently been completed and forwarded to Cape Kennedy.

6. CONTRACTOR REPORTING SYSTEM: A system for contract status reporting is being developed for R&DO Resources Management Office.

7. TMB AND FMO SYSTEM: The first progress report has been made to Mr. Newby, DEP-A, on the special task force for TMB and FMO implementation.

8. FACILITIES: A presentation will be given by Computation Laboratory to General Electric Support Contractor on January 19, 1965 on all facilities to be used by civil service personnel in order that General Electric may prepare their facility requirements.

NOTES 1/11/65 JAMES

B 1/11

SA-9: Prelaunch checkout of SA-9 is proceeding satisfactorily. I plan to schedule a prelaunch review for the first week in February depending on your and Dr. Rees' calendar.

PEGASUS "A": Test and checkout of Pegasus "A" is continuing in Hangar D. The formal wing deployment test, with live ordnance, was successfully conducted 1/7/65. The Spacecraft was scheduled to move into Hangar AF on 1/10/65 and the mating with the Apollo Boilerplate Module was to start 1/11. It now appears that because of many small tasks yet to be done in Hangar D, mating with the Boilerplate cannot start until 1/12 or 1/13. The impact of this slippage is being reviewed with KSC personnel, however, it is not anticipated that the launch date will be affected.

WEIGHT & PERFORMANCE PROJECTIONS FOR SA-207: (MRAZEK) We are preparing a performance projection chart which can be used as backup in the Minuteman presentation in Washington. We plan on providing rough estimates on the (1) 210K H-1, (2) elliptical orbit, and (3) some additional S-IVB changes.

SA-201 TEST OBJECTIVES: (MRAZEK) Action has been initiated to define the primary and secondary test objectives for this mission. These are needed for incorporation in the Mission Directive and serve as a basis for determining launch vehicle constraints for final shaping of the reference trajectory. These objectives will be finalized as soon as possible.

S-IVB GROUND CUTOFF COMMAND FOR SA-201 & 202: (MRAZEK) MSFC has reviewed the MSC request from the December Flight Control Operations Panel Meeting to incorporate a ground cutoff command capability in the S-IVB. It has been determined that this would jeopardize the primary test objective of launch vehicle guidance cutoff which is necessary to assure the fulfillment of the subsequent Saturn IB missions as delineated in the FMAD. A letter will be forwarded to MSC stating the MSFC position.

SATURN IB DYNAMIC TEST VEHICLE: The S-IB D/F stage and the S-IVB-D stage arrived at MSFC on January 4. The S-IB D/F will be erected in the dynamic test stand on 1/9. The modifications to the S-IVB-D stage will be complete by 1/15 and erection of that stage will be on 1/18. The Instrument Unit and LEM Adapter will be erected into the tower on 2/9.

NOTES 1-11-65 Koelle B 1/11

1. ORION: Lt. Col. Burke (AF ORION Project Officer) invited MSFC to participate in a paper on ORION. This paper is to be delivered in April at the AF OSR (Office of Scientific Research) Advanced Concepts Symposium. The topics are:

Part 1	Contractor	(Jim Nance) Technical Description
Part 2	AF	(Col. Burke) Military Potential
Part 3	NASA	(Woodcock) NASA Potential

Mr. Woodcock of this office will prepare our contribution. Judging from past experiences, we may have difficulties obtaining Headquarters' permission to present this paper. I think permission is required from both Harry Finger and Ed Gray.

HHK

In spite of Dr. Mueller's very fine letter to Seamans on Orion, the "Finger line" seems to have prevailed. Finger showed me a letter signed by Hilsbun (for Seamans) which states flatly that NASA has "no funds to support Orion". I think Ruppe has seen that letter. With this official NASA position, auspices are dim for time being. Maybe Gen. McKee is the only man who can arrange for us to be asked in to give this presentation. B 1/11
As far as I am concerned, you may cautiously explore this possibility with McKee direct.

NOTES 1-11-65 KUERS

B 1/11

1. S-IC Pressure-Volume Compensator (PVC) Problem: The PVC's for the S-IC stage are being developed by the Arrowhead Company under an MSFC contract. The Fuel PVC's have passed all quality tests; the inboard and outboard LOX PVC's, however, failed recently in vibration testing after they had already passed all other cycling, pressure, and load qualification testing. This failure resulted in a redesign of the struts, to be made of Inconel 718, and beefing up of support rings. The struts of these PVC's are the most critical item with a 16 week lead time requirement. This occurrence requires a replacement of all LOX PVC's for the -T vehicle and results also in a serious delay of delivery of LOX PVC's for flight number one. To minimize the impact on our schedule we have agreed with all parties involved to replace these compensators for -T on the Test Stand. The first delivery of qualified hardware to MSFC will be April 15. It was also agreed to utilize the unqualified LOX compensators which are presently installed on -T for the Dynamic Vehicle from Boeing.

2. Review of Planning and Tooling Program for Block II Apollo: This review was accomplished last month at NAA on request of MSC. We were in complete agreement with the basic tooling concepts. Even though it was recognized that the initial cost of tooling as presently planned will be relatively high, the total program cost will not be adversely affected. The proposed tools will remove much of the "judgment factor" from inspection, which at the same time provide assurance that each major sub-assembly will match up to make an acceptable final assembly. Such exercises are of great value to both parties--MSC as well as MSFC--as it provides for technical assurance of the manufacturing plan and allows a lateral exchange of experience on the highest technical level.

I agree B

NOTES 1/11/65 MAUS

B 1/11

1. MSFC MISSION STATEMENT - On January 7, after discussions in Washington between Mr. Gorman and Mr. Rieke on this subject, we received a revised MSFC Mission Statement from MSF. This revision is acceptable, and we have so notified headquarters by teletype, signed by Mr. Gorman. Presumably, the statement now goes to Dr. Seamans and Mr. Webb for approval, and subsequently will be published as the official MSFC charter. ✓

2. ANNUAL CONFERENCE OF NASA ADMINISTRATIVE OFFICIALS - Ray Kline pulled together a 30-minute presentation on Management Improvements at MSFC for Mr. Gorman to use at the Annual Conference of NASA Administrative Officials in Houston tomorrow. Subjects include: Incentive Contracting
Status of PERT Applications
Documentation Program
Strengthening of Program Management, and others. ✓

3. CONGRESSIONAL MATTERS - Ray Kline sent you a memo summarizing the results of Capt. Freitag's Jan. 5 meeting on MSF Congressional preparations. A more detailed report will be presented at the January Staff and Board Meeting.

   Later this week, we expect to receive for comment a draft of the one-hour statement on the Manned Space Flight Program that Dr. Mueller will present to the full House Space Committee. ✓

4. DOD CONTRACT ADMINISTRATION SUPPORT - Joe Dickerson, Chairman MSF/DOD Task Group, has replied to the MSFC comments resulting from our discussion on Dec. 18. The majority of our points were accepted. ✓ However, the major point of maintaining our Contract Administrative people (Hirsch's office) at seven prime contractor locations is left open for discussion at the Jan. 12, 1965, meeting of the Task Group in Washington.

   Jay Foster and I met with Mr. Gorman and agreed on a no-retreat position for Jay to take to this meeting. ✓✓

5. MISSION OPERATIONS - NASA has recently issued a revised organization chart which establishes Mr. E. E. Christensen as Director of Mission Operations within MSF and formalizes changes at MSC and KSC. Within this top level framework, Mr. Christensen has prepared a detail matrix in draft form delineating the functions between his area of responsibility and other elements of the MSF program. MSFC has been requested to prepare comments to this proposal.

   The significance of the proposals suggest that a policy discussion be held before distribution of the matrix for comment. Due to the importance of this subject, I have arranged a policy meeting for 1 P.M. today as a preliminary step to establishing MSFC position and plans for implementation.

HM Please keep me posted. Ties closely into our KSC problem!

NOTES 1/11/65 McCartney

B 1/11

1. FY-67 CofF PROGRAM: Last week, R-DIR reviewed the preliminary requests from the laboratories for FY-67 Cof F projects, totaling $35M. On January 8, a presentation was given to the R&D Council showing the total laboratory submission and Mr. Weidner's selected projects amounting to about $9M. Mr. Weidner has now completed final review of the proposed projects list, and it is being forwarded to the Facilities and Design Office.

2. PERFORMANCE EVALUATION PROCEDURE FOR SINGLE SUPPORT CONTRACTS: As you recall, you signed a letter to Dr. Mueller, dated November 23, 1964, which outlined the MSFC overall recommended schedule and approach for evaluating the Single Support Contract effort. In the letter, it was requested that consideration be given to establishing the frequency of evaluating the Contractors performance and awarding the incentive fee earned semi-annually instead of quarterly. Dr. Mueller was also asked to hold in abeyance his decision on the frequency of these evaluations until our complete evaluation procedure had been submitted. This procedure is now in final draft form and is being staffed with the laboratories, Center Staff, and IO. A finalized and fully coordinated procedure should be available for your approval and signature within about a week. That procedure, when approved, will become a negotiated clause in each of the Single Support Contracts.

3. MANPOWER AUTHORIZATION TO LABORATORIES: Last week, this office issued vouchers to the labs showing a reduction of 20 spaces in overall R&D Operations' ceiling. These reductions reflect the numbers previously agreed to by IO & R&D Operations in the overall R&D Operations Manpower Plan.

B 1/11

NOTES 1/11/65 RUDOLPH

1. Saturn V Financial Status - The obligations through December 31, 1964, were $701.9M vs $685.0M planned, which is an increase of $16.9M over original planned obligations as of December 31, 1964.

2. Saturn V Payload Weights - A request for updated Saturn V Payload Weights has been received from MSF. The information is to be used in the NASA Pocket Statistics pamphlet, and will probably be publicly released. Required data will be provided this week.

3. Modification of Boeing Contract NAS-5608 - (reference Notes 12/28/64 Rudolph, copy attached) In response to your question on statement..."This contract extension (Boeing) of $89,935,619 included the Saturn V Breadboard Facility Operations, but excludes the Dynamic Testing and GSE engineering support." The Dynamic Testing Program (Phase I) was negotiated separately for $3,135,976 and is, at this time, being prepared for transmittal to MSF for approval. The GSE engineering support is still in negotiation phase.

4. Presidential Scientific Advisory Committee (PSAC) Meeting at S&ID/NAA on January 11-12, 1965 - During the dry run of the PSAC presentation at MSC on January 5, 1965, General Phillips stated that the January 11-12, 1965 meeting at S&ID/NAA will be the first of four such presentations to the PSAC covering the reliability status of the Apollo Program. The other three meetings will be scheduled approximately six weeks apart and will include the Saturn V Launch Vehicle at MSFC, LEM at Grumman, and the Launch Facilities at KSC. No firm dates have been established at this time for these presentations.

5. S-II Stage:

S-II Confidence Development Testing - A complete review by S&ID of their proposed supplemental reliability systems test programs, which were generated as a result of deletion of flight systems from the S-II Battleship, will be presented on January 14 and 15 at MSFC. A decision for or against will be made at this time.

The requirement for this supplemental testing has been questioned by cognizant MSFC laboratories, however, the contractor has consistently claimed a serious schedule slip in attainment of reliability goals will occur without this testing. Specifically, S&ID predicts a slip in attainment of Confidence Level 3 (Manned Rating) for S-II flight systems from S-II-2 launch to S-II-4 launch, and for S-II Stages from S-II-2 launch to S-II-8 launch.

A.R. Request briefing B

6. S-II Common Bulkhead - Fabrication and assembly of the second S-II Common bulkhead for the Common Bulkhead Test Tank has been completed. Ultrasonic inspection was accomplished in mid-December and evaluation of the results has been completed resulting in an acceptable bulkhead.

Attachment: Notes 12/28/64 Rudolph (Dr. von Braun and Mr. Weidner's copy only)

B 1/11

NOTES-1-11-65-SHEPHERD

Arsenal Road System: An action item of the meeting between yourself and Maj. Gen. Zierdt, held on December 16, 1964, was that Col. Allgeier would present to our Headquarters a reclama for an over-pass at the Goss and Rideout Road intersection. Col. Allgeier had his day in court and presented his case to MSF on Jan. 7. His story was most convincing except that he used traffic figures which differs from those previously furnished us and to our Headquarters. As a result MSF has directed us to review our position to validate the traffic count. The Army will immediately resurvey the traffic by a detailed car count. If the new count substantiates the case presented to Headquarters, it appears very favorable that we will obtain approval for this project. The project would be funded through a reporgramming action and time phased to coincide with the construction of the six lane Rideout Road improvement. ✓

President's Missile Sites Labor Commission: Messrs. W. E. Simkin, W. E. Scott, Mr. Kuczma and Dr. J. T. Dunlop of the President's Missile Site Labor Commission visited for one-half day on Jan. 6. They were accompanied by 14 people from the Corps of Engineers, Gen. Wilhoyt was the senior Corps of Engineers representative. The reaction of the group to the briefing and tour was most favorable. Your welcome talk alerted them to the potential labor problems at MTF during the concurrent completion of construction, activation and installation of the technical systems. Examples of this situation were pointed out during the tour of the S-IC Test Stand. ✓

Huntsville-Madison County Airport: In response to Mr. Ed Mitchell's letter to you on December 28, in regard to the County airport, we have alerted a group to collect and analyse the latest information in regard to expected acoustical levels near the airport. The design of the airport is being accomplished by the FAA for the control tower and Reed-Mullins, a local A-E, for the remaining. The FAA tower design is of the Lloyd Wright architectural school - a sweeping concrete cone, rising eight stories and topped by the control room. The natural frequency of such a concrete structure will be low and could be in the band of our maximum acoustical energy. Mr. Mitchell is to arrange for a briefing by the A-E within the next week. At that time we will be prepared to advise the A-E in regard to the design for the acoustical level expected at the airport. If the data to be presented appears to have any major design impact, I would like to have you review it first as this data will have applications at Triana, Space City and the residential dwellings that will be built up along the western portion of the Arsenal. ✓ Please lay on a review, if

B 1/11

O.K.

NOTES 1-11-65 Stuhlinger

B 1/11

1. RESEARCH ACHIEVEMENTS REVIEW: The first presentation in a newly established, regular series of monthly research achievement reviews will be given on January 29. These reviews will give visibility and recognition to the results of MSFC research projects.

2. NASA-DOD COOPERATION IN RESEARCH PROGRAMMING: As a further step toward closer cooperation between NASA and DOD in the planning, accounting, and documenting of research projects, a new research task description form (NASA Form 1122) has been designed. It will facilitate exchange of information between NASA and DOD. A meeting on this subject will be held at Headquarters on January 25-26.

3. FY-1964 OART RESEARCH PROGRAM: The last 1964 OART contract obligation was finally signed on December 30. Total obligated program funds amounted to $10,483,311.

Harry
J.
FYI
B

4. TABAKA STUDY: The Tabaka study is costing myself and my staff an unreasonably large amount of time although the cooperative spirit is high on both sides. (The time has amounted to about 100 manhours for branch chiefs, deputy, and Laboratory director within the last 3 weeks alone, not counting the time spent by the individuals selected for benchmark positions.) Agreements could be reached quickly on minor issues, but not at all on main issues such as recognition of creativity, of scarcity of talent, or of the fact that wrong decisions by research type incumbents may be felt only 2 to 5 years after the time of decisions.

See my remarks on Eisele NOTES 1/11/65.

We appreciate the fact that changes in MSFC'S grade structure must be made, and we are entirely willing to comply with the unavoidable. However, the management tools which are available to us to effect these changes are not at all developed, and the tremendous time and effort spent on the Tabaka study has not produced these tools either. It seems to me that we would be well advised to borrow a little from the experience and efficiency of industry in handling such matters.

B

Discussion of this subject started in the R&DO Council Meeting on January 8. I believe that more joint discussions between management, Laboratory and Office directors, and Personnel Office will be necessary before solutions to the problems can be found. In the meantime, practically all personnel actions have been stopped within MSFC, and will remain stopped until June!

OK

Jan 18, 1965

MEMORANDUM

From

HANS MAUS

To Dr. von Braun January 26, 1965

Re: "The Package"

I am working full time on your guidelines, incorporating your latest inputs. Hope to have portions of it for your review tomorrow.

At the same time I will send to you a draft of R&DO and IO Charters which I have repeatedly discussed with Ed O'Connor and Hermann Weidner.

Attached please find comments to your remarks on yesterday's Notes.

Hans H. Maus

SHOW DIRECT
FW

GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA

Memorandum

TO Dr. von Braun, DIR

DATE 1/26/65

FROM Director, Executive Staff, E-DIR

SUBJECT Mission Operations

REFERENCE Your Comments to my Notes 1/18/65

1. MSFC Resident to OSRO

Concerning the appointment of a resident MSFC man to Mr. Christensen's organization (OSRO) in Washington:

a. Dr. McCall is basically opposed to Marshall establishing a permanent Headquarters representative on general principles. He further believes we should not establish a Headquarters office in OSRO without reopening the MSFC permanent Headquarters office question in general.

b. This point is well taken. However, the OSRO organization is fully approved by Dr. Seamans on the recommendation of Dr. Mueller and is already semi-operational. Further, it is not really a true Headquarters activity in the conventional sense. Delay in appointing an incividual would work against us.

c. It is difficult to find a man willing to go to Washington and doubly so without an internal organization and reporting channel established. However, we should not let this fact inhibit our search for a man and his subsequent appointment. Quite right!

H.M. When I said "adequate interface with Christensen" (in my remarks on your NOTES 1/18/65) I meant first and foremost: we must establish an organizational element at MSFC to take care of all "operational" problems. Whether or not that office should have a resident man with OSRO is question #2. B 1/26

RECEIVED JAN 26 1965 DIR

MSFC - Form 488 (August 1960)

Subject: Mission Operations

2. Nomination of Mission and Flight Directors

a. The last sentence of paragraph (2) of the referenced notes contains an error. The sentence should read:

> Captain Holcomb raised the question as to when MSFC will nominate Mission (not Launch) Directors for SA-9, 8, and 10.

b. This difference is significant since the Launch Director and Flight Director report to the Mission Director. Under Christensen's proposal:

(1) Launch Directors are normally nominated to Christensen by Dr. Debus. ✓

(2) Flight Directors are normally nominated to Christensen by the Payload Agency, i.e., Chris Kraft for Gemini and Apollo, MSFC for Pegasus (?).

(3) Mission Directors will probably be nominated to Christensen by the organization having overall responsibility for accomplishment of the space vehicle objectives. ✓

c. With this understanding:

(1) MSFC is expected to nominate to Christensen both Mission and Flight Directors for SA-9, 8, and 10. ✓

(2) To insure MSFC control of the mission, and as precedence for future flights (i.e., SA-203), we should carefully consider nominating individuals for these tasks. We are already planning to perform these functions, in fact, but outside the framework and terminology of the Christensen task force concept. ✓

d. It should be noted that whoever these men are, in so far as their conduct of these assignments are concerned, they are part of the "Christensen Team" and are operating outside of their normal line organization discipline. Of course, the environment of their normal assignment will facilitate (or hinder) their carrying out of this flight role.

H. M.

I agree with all this. Now, who is our man? Montgomery? Why don't you discuss this with Lee James, Herm Weidner and Jack Balch?

B 1/26

Subject: Mission Operations

3. MSFC Operations Organization

a. For your information, various activities have been going on for some time which interleave with the establishment of a Mission Operations organization at MSFC. These include:

(1) Implementation: MSFC/KSC Agreement

(2) Preparation: MSFC/MSC Agreement Draft

(3) Function Delineation: MSFC Flight Operations

(4) Development of MSFC Comments: MSF Matrix on Mission Operations

b. Considering your request to develop our interface relationship with Christensen, I will work with Jack Balch, I.O. and R&DO to develop an acceptable plan for the center.

Hans H. Maus

FOR THE RECORD:

At Mr. Maus' request, I erased the note concerning "Monty" and "discuss with Jack Balch." (Reference para 2.(2).)

Attached is a copy which includes the note and I ran a copy for Mr. Maus. Other notes to be run will not show this.

BH
1/25

Bonnie - Suggest you also eliminate the part I marked. I did it. fw

fw 1/25

OFFICE OF DIRECTOR – MSFC

CODE	NAME	INIT.	ACTION	INFORMATION
	Bonnie			

take out comments re: Kah: Director appointment. Rest should stay in. 1/25 AM

REMARKS

Please show this page to Mr. Maus before you distribute it. Mr. Maus may want to keep some of my comments "sensitive". So maybe you just distribute an unmarked page. B 1/25

CODE	NAME	DATE

MSFC - Form 495 (Rev August 1963)

NOTES 1/18/65 MAUS

B 1/25

1/18/65

1. MR. WEBB'S LETTER TO PRESIDENT JOHNSON - Mr. Webb has requested your comments on the rewrite of the Future Program Task Group Report, and on a draft of his reply to the President's letter of January 30, 1964, which requested examination of future missions and technologies required to accomplish them. In his letter, Mr. Webb states two major objectives which appear to be within the framework of feasible resource levels for FY67 and following years. These objectives, which he recommends as programs, are:
   - exploration of Mars through use of large unmanned soft landing spacecraft, with 1971 Mars near-approach to earth as the target date, and
   - a systematic program extending over several years to use Saturn boosters and the Apollo LEM for a variety of scientific and technical missions in near-earth and synchronous orbits.

   Due to late receipt (Jan. 13) and short deadline, we plan to handcarry the MSFC comments directly to Mr. Webb's office on Tuesday, or as soon as we have been able to review the report, letter, and consolidated MSFC comments with you.

H.M. I hope you have received the copy with my comments and have incorporated them in our reply. If there are any questions please contact Frank W. with whom I have discussed the draft. B

2. MISSION OPERATIONS - Jay Foster attended the January 13 Joint Operations Group meeting in Washington and reports the following:
   (1) Mr. Porter Brown (formerly Shea's representative with Preston at Cape) has been appointed Chief of the new Operations Support Requirements Office (OSRO), a new element of MSF reporting to E. E. Christensen. Mr. Christensen describes OSRO as a working group, meeting in permanent session. He and Mr. Brown are renewing their request for MSFC to assign full time MSFC representation to OSRO, by the latter half of February. Goddard has already assigned one man to OSRO. → Suggestion? B
   (2) Mission, Flight, and Launch Directors have been named through Gemini three, and Rip Bollinger (formerly AF) was announced as Mission Director for SA-201, during the January 13 Joint Operations Group Meeting. Capt. Holcomb raised the question as to when MSFC will nominate Launch Directors for SA-9, 8, and 10. → Why not Monty, if we have to name someone?
   (3) MSFC's current multiple (often divergent) input to operations activities may hurt MSFC when hard priority decisions are required between MSFC, MSC, KSC, OTDA, Goddard and DOD. These decisions are rapidly approaching for early Saturn IB launches.

H.M. I would appreciate Exec. Staff to work out a suggestion how we should set up and staff our "operational" element to provide an adequate interface with Christensen. This should become part of the ultimate Guidelines for the R&D/I.O. matrix. Suggest you discuss pros and cons with Jack Balsh B

In line with agreements reached with Messrs. Weidner, McCall and Hueter in the January 11 policy meeting on this subject, the revised organizational and functional relationships matrix is being reviewed by appropriate personnel of MSFC, assuming all MSFC mission operations functions, both program and operations, are consolidated into one MSFC line item on the matrix. MSFC comments on the matrix are due in MSF by Feb. 1. We will arrange a briefing for you prior to that date, to review the MSFC position.

OMIT

NOTES 1-18-65 BELEW

B 1/25

H-1 ENGINE

Eight of the SA-201 engines have completed retrofit and hot-firing at Neosho. Two of these engines are being shipped to Michoud today and two more are scheduled for shipment tomorrow. The remaining four engines will be shipped the week of January 18.

Two engines for SA-203 have completed buildup. Hot-firing is scheduled to begin Monday, January 18, 1965.

Pre-qualification of the 200K H-1 engine is in progress.

In conjunction with Lee James' people, we are actively looking at all facets of increased thrust for the H-1 up to approximately 210-220K.

F-1 ENGINE

Cocoon configuration thermal insulation testing is underway at Santa Susana. The insulation, installed on an engine, has successfully withstood the exhaust of a jet engine operating at half power and full power. Although these tests have not obtained full expected flight temperature and pressure, the results thus far are satisfactory. Future tests will simulate expected flight temperature and dynamic pressure distribution.

FM 105 (Block II configuration mockup) was loaded on the Guppy at Los Angeles on January 13 for movement to Michoud.

Engine 2010 for S-1C-T and 2011 for 501 went to NASA/RETS for acceptance tests on January 11 and January 13, respectively.

RL10 ENGINE

A comprehensive review of the Centaur AC-4 flight data during the past several weeks has indicated that the RL10 engines did re-ignite, but operated only in the low-idle mode (Non-rotating turbopump gas phase) due to a cavitating hydrogen boost pump. Chamber pressure was 6 psia, mixture ratio was 35 to 70, and thrust was calculated to be 250 to 300 pounds. (A detailed report on this is attached for your information.)

We are conducting fuel tank ullage collapse tests at P&W in Florida to achieve a data correlation trend with the AC-4 flight.

J-2 ENGINE

Testing has resumed on R&D engine J015 after replacement of the damaged gas generator (previously reported). A test program of 20 additional tests to evaluate the gas generator, engine hot alignment, extended fuel lead and restart will be conducted.

Production engine J2013 has completed hot-firing acceptance testing and is currently undergoing post test inspection and checkout prior to delivery. This is a flight configuration engine and is scheduled for S-IVB Battleship testing. Production engine J2014 is installed on the test stand. A new gas generator is being installed prior to acceptance testing.

C-1 ENGINE

A survey of the contenders, for the C-1 contract negotiations, is being conducted as part of the proposal evaluation. Plant visits were made this week.

Attachment: For Dr. von Braun's copy only.

NOTES 1-18-65 CLINE

1. FULL-SCALE EXPLOSIVE TESTS WITH S-IV VEHICLES: (Reference NOTES 1-11-65 CLINE, paragraph 2) Negotiations for the first test have been completed, funds have been transferred, and the vehicle has been delivered to Edwards Air Force Base via Guppy. The test should be conducted during the next two to five months; the exact date has not been established at this time.

Funds for test of a second vehicle have been requested in the FY 1966 budget submission. If approved, the second test would be made in 1966.

2. SATURN V: A frozen turbopump aborted an F-1 Engine (F-1002-2) test at MSFC on 1-11-65. Cutoff signal was given (before mainstage was attained) when the ignition stage limit timer expired before the main fuel valve's left closed position. Inspection showed that the turbopump shaft could not be turned during the normal torque check. Water was in the cavity behind the LOX impeller and frozen when LOX entered the pump, thereby prohibiting movement.

3. SATURN IB/MINUTEMAN: At the request of the Air Force, a NASA/DOD panel has been established to determine possible NASA requirements for the use of the solid Minuteman motor. NASA participation in this panel is headed by Mr. J. Salmanson of OSSA and is being coordinated with OMSF. Mr. Salmanson or his representative will be present at the 1-18/19-65 sessions to observe the results of the Saturn IB/Minuteman investigation.

4. KIWI-TNT REACTOR SELF-DESTRUCT TEST SUCCESSFUL: On 1-12-65 a specially-equipped KIWI reactor destroyed itself with an explosive yield equivalent to 100 pounds of high explosive. The reactor used in the test was a KIWI-B4, similar to the reactors successfully run last fall during the Los Alamos KIWI program, but with a higher nuclear reactivity and special high-speed control rod drives. The nature of the modifications and the low yield of the test support the relatively low hazard magnitude associated with handling, launch pad, or control motion accidents with present ROVER reactors. Additional ROVER safety information will result from analysis of the fragments of the exploded reactor core. Los Alamos Scientific Laboratories have predicted that equivalent explosive yields on the order of the yield achieved should produce virtually complete pulverization of the core. Should the test results confirm this prediction, a reactor destruct system may be attainable using inherent characteristics of the ROVER nuclear rocket engine.

Attachment #1: NOTES 1-11-65 CLINE

NOTES 1/18/65 CONSTAN

B 1/25

1. STATUS OF S-I/IB

S-I-8. Modifications and shop operations are being worked. Final checkout is complete.

S-I-10. This vehicle was moved into final checkout on January 8. Post-static checkout is proceeding in a normal fashion.

S-IB-1. Pre-static checkout is approximately 75 percent complete. The defective prevalves have been replaced and the original valves returned to the vendor (Parker Aircraft) for repair and correction.

S-IB-2. Cable installations have been started and the engines have been removed for shipment to Rocketdyne for retrofit.

Engine Damage. Thrust chamber tubes on the engines for S-IB-2 were discovered to be dented. The cause was the use of an improper tool for installation of the straps connecting the thrust chamber to the center star fitting. Action is being taken to survey all engine handling and installation procedures due to the numerous cases of engine damage which have occurred.

2. STATUS OF S-IC

The F-1 engine mockup for use by The Boeing Company arrived January 15.

S-IC Logistics Survey. Michoud participated in a survey of the S-IC logistics activities conducted by Mr. F. E. Waller, NASA Headquarters, accompanied by MSFC/Huntsville representatives. Mr. Waller's survey will encompass the total Apollo Program and will result in a status report and recommendations to General Phillips.

NOTES 1-18-65 DANNENBERG

B 1/25

1. Configuration Management - The following actions are being taken: The S-IC Stage Manager will arrange for an Engineering Review at MSFC with the Boeing Company covering (1) CAM's that are open, (2) CAM's that have been approved, but might have an impact on 501, (3) CAM's in process and forecast by Boeing. This review will be held shortly after the Boeing quarterly review on 1-27-65 at Michoud.

The entire change procedure with Boeing will also be reviewed at that time in regard to latest configuration management needs.

2. Project Pattern - Honeywell will brief the R&D Operations on Pattern (Planning Assistance through Technical Evaluation of Relevance Numbers), a computerized methodology applicable to technological planning. Basically, Pattern is capable of showing the relative values of technologies when compared against the overall aerospace effort. The immediate application for Pattern is envisioned as a support for the Experiment Coordination Office in the evaluation of in-flight experiments. Your attendance will be requested for the next Pattern presentation to be given in the near future.

3. Crew Safety - Latest structural and flight mechanical information confirms adequacy of EDS design, except that Saturn V "hard over" at Q max requires lowering of abort setting to about 3°/sec. (Mercury and IB = 5°/sec.) Bellcomm reviewed "cold vs. hot wire" and concludes that decision should have been hot wire. Review in next Crew Safety Panel Meeting will attempt to resolve the "open vs. closed loop" EDS issue for flight 202 between MSC and MSFC.

4. Scientist Astronauts - Our candidates have been requested to undergo psychological testing. Only one, (the parachutist with contact lenses) has been rejected so far.

5. Joint Apollo Flight Operations Group Meeting in Washington under General Phillips and Mr. Christianson confirmed Headquarter's intent to take strong lead in "operations." An AF Colonel Bolinger (?) was introduced as 201 mission director. (background: Skybolt)

6. The Manned Flight Awareness Program has been completely transferred to IO. Personnel action for Dr. Farish and secretary is in process. Colonel O'Connor, Dr. Farish, and Scott Carpenter toured the facilities of Parker Aircraft and NAA/LAD accompanied by Mr. Parker of NAA/S&ID.

B 1/25

NOTES 1-18-65 FORTUNE

1. Col. Gould enjoyed visit - He said in letter of January 12, expressing "appreciation for the excellent briefing and tour of facilities provided" on January 8. He was particularly interested in "problems prevailing and progress being made," asking many questions relating to operation and maintenance. He wanted to know what GE did, what they sub-contracted, how their performance was. He indicated that Congress would be looking into support contracts, and give some helpful suggestions for future presentations. Connell did a good job on his, concerning maintenance matters. We are providing Lt. Col Barnett all the material Gould requested.

2. Logtown School presents problem - Hancock County School Board has written a request to keep the Logtown School open for 130 pupils until January 1966. Last spring, after voters rejected a School Bond issue, we granted permission for the school to be used until June 1965. Because of differences of opinion among School Board members, and county supervisors, as to where to locate new facilities, and old-time residents opposition to increase in taxes, nothing has been done since then. We have been able to get local influences applied to initiate county action on settling with Corps for the school and building a replacement but this will take time. We are studying our schedule for LOX - LH2 operations and other considerations involving an extension. It might be desirable to get Senator Stennis in on our side. Hope to be able to judge whether or not it can be handled just by MSFC personnel by time of next Planning Board Meeting, January 29.

NOTES 1/18/65 GEISSLER B 1/25

1. Saturn IB Control Weights: Release of Saturn IB control weights is being held up pending definition of technique of determination of the optimum fuel bias. A new more sophisticated method developed by Aero-Astro will provide a gain of ≈100#. Final acceptance by P&VE of this method is still pending. ✓

2. Dynamic Testing Requirements: Based on theoretical investigations by Aero-Astro, the Control Dynamics and Structural Feedback Committee decided to eliminate the styrofoam balls as liquid hydrogen simulators at the first stage flight dynamics tests of the S-IB phase, resulting in considerable time saving at the tests. Similar conclusion for Saturn V testing for S-IC and S-II flight phases was reached. S-IVB burning simulation still being analyzed. ✓

E.F. Can we keep this for 501 option open in case 203 restart of S-IVB fizzles? Suggest you discuss this with A. Rudolph + Co. B

3. Saturn V SA-501: Recent statements indicated that S-IVB restart may not be available for SA-501 and that the reentry mission would be jeopardized. The reentry mission can be accomplished without S-IVB restart capability with the only currently apparent consequence that test objectives provided by monitoring the S-IVB in the nominal LOR parking orbit would be lost. The purpose of the parking orbit has always been a launch vehicle R&D requirement. The flight profile without S-IVB restart would be roughly: S-IC/S-II/S-IVB injection into a coasting ellipse with an apogee altitude between 15-20,000 km, a coast phase (x hours), ignition of the Service Module and burn to reentry ellipse with CM recovery near Hawaii where recovery is more difficult.

4. Joint Operations Group Meeting: 1/13 Washington meeting was chaired by Gen. Phillips. Items of interest to MSFC: (a) Brown and Russel (Mission Operations) will visit Centers for discussions of proposed operations documentation flow; Speer nominated as MSFC contact. (b) Procedures for Program Directors Flight Readiness Review will soon be distributed for review. (c) Operational Support Requirements Office now operational under Brown (formerly MSC-Cape); (d) Col. Bolender was introduced as SA-201 Mission Director. (e) Gen. Phillips showed reluctance toward on-board TV for crew safety purposes. (f) He was concerned about remote site operational status and requested a working session in Houston during week of 1/18 to analyze in depth all mission requirements and their implementation. A presentation was given on the Saturn guidance equations by Mrs. Chandler and was well received. ✓

5. Saturn IB/SA-206 "LEM Alone": Analysis of the above mission indicates maximum injected payloads into circular orbits between 90 - 200 na. mi. ranging between ≈35,500# and 27,600#, respectively. MSC has indicated a requirement of 36,150#. In terms of available performance this constitutes a LEM offloading of 600# at 90 na. mi. to 8,550# at 200 na. mi.

E.F. Lee Below seems to be quite optimistic re uprating of the H-1 to 210 or 220K. Maybe we can accomplish this for 206. (After all, LEM alone is even an unmanned mission!) B

NOTES 1-18-65 GRAU

B 1/25

1. S-IC-S FUEL TANK: Hydrostatic testing was completed on this tank January 12, 1965. ✓

2. F-1 ENGINES: The first alignment verification of an F-1 Engine (Spare S/N 2005) has been successfully performed. ✓

3. S-IVB PROGRAM: The S-IVB-201 stage is in cleaning tower number 4 for final cleaning and close-up of tanks prior to checkout. Continuity checks were to have started January 15, 1965. Of 51 test procedures required for checkout, three are written, and none have been submitted for approval. There are 305 hardware drawings yet to be released; 563 part shortages exist, the majority of which will affect checkout. Of 109 wire harnesses required, 56 are complete. ✓

D.F. I can't interpret this in terms of program impact B

4. PEGASUS PROTOTYPE: Acceptance testing of the Prototype Electronic Canister should begin this week. Preliminary engineering test conducted on the Canister last week yielded satisfactory results. ✓

B 1/25

NOTES 1/18/65 HAEUSSERMANN

1. FAILED PRESSURE TRANSDUCER ON AN F-1 ENGINE: The following is in answer to your recent questions to Mr. Hoberg: The referenced pressure transducer (photocon) is a Test Division instrument added for static firing only. The photocon transducer is a capacitance-type pressure sensor with water circulating around it for temperature conditioning. Water left in the line over night apparently froze causing the transducer to rupture and allowing water to leak into the pump. All flight pressure transducers are dry with the exception of a few which use a small volume of compatable fluid for damping purposes. A failure effects analysis has been conducted on all flight instrumentation. Some types of failures could fail the vehicle: For example, if a pressure transducer case were to burst. We feel that, through rigid specifications, qualification and acceptance testing, we have adequately covered all possible failure modes. For example, the burst pressure for pressure transducers is four times the operating pressure or greater. ✓

2. FUEL CELL: The test report on the Allis-Chalmers fuel cell breadboard system recently received from MSC, Houston, shows that performance was quite good for 500 hours. The unit was shut down for the holidays and the canister was removed for internal inspection but the cell stack was left intact. MSC plans to resume tests in a new facility to determine whether performance will remain within limits for 720 hours. Would you like a copy of the report? Yes B

3. STATUS OF FLIGHT SIMULATION FACILITY IN COMP LAB: Completion of this facility has been delayed because of its low priority status. Of the few people available for this project, most of them have been used to support Pegasus. In addition, we had to face bankruptcy of the contractor for the celestial body motion simulator before our contractural work was finished. As anticipated, the stringent alignment requirements of the facility are extremely time consuming. In spite of these hampering facts, the overall simulation system with three main subsystems, namely the laboratory facilities, the attitude motion simulator, and the celestial body motion simulator, is gradually approaching completion. The following work is still to be done in these three areas: (a) Laboratory Facility - Improvement of the presently inadequate air conditioning control. (b) Attitude Motion Simulator - Installation and alignment of the platform and final mounting of instrumentation. (c) Celestial Body Motion Simulator - Fine alignment of the azimuth and elevation tracks, installation of the slip ring assembly, the elevation cart power buss and associated wiring, modification of the elevation cart drive and subsequent installation of the cart instrumentation and associated wiring. The pacing items are expected to be the modification of the elevation cart drive and the improvement of the air conditioning control. The latter is a major problem area since no precise alignments can be effected in the present environment. It is now estimated that the simulation system can be ready for operational use by 6/15/65. As you will remember, Lockheed is supporting us on this project. Because of the delay, we may need to supplement the contract by approximately 40K to extend Lockheed's period of performance. ✓

4. ESE CHECKOUT FACILITY: We are moving the ESE checkout equipment into Bldg. 4373 on planned schedules. We appreciate the special effort of Messrs. Shepherd and Foxworthy in accomplishing the modifications in time. ✓

NOTES 1/18/65 HEIMBURG

B 1/25

1. F-1 ENGINE:

Test TWF-042 was cutoff by expiration of ignition stage limiter timer because mainstage was not attained in the pre-determined time. Subsequent inspection revealed ice in the lox pump which kept it from turning. It has not been possible to determine positively the source of this water. However, most probably, it was overlooked during refurbishment operations after the previous mishap with the leaky photocon transducers. The lox system including the lox pump has been redried, a new lox pump seal installed, and preparations begun for Test TWF-043 scheduled for 1/19/65. The test objectives for this test will be the same as Test TWF-042.

2. S-IC:

The holddown arm load test system installation (West Area Stand) was delayed because of the cold weather. Load testing of the holddown arms is anticipated to start 1/25/65.

2. S-IVB (DOUGLAS/SACRAMENTO):

The chilldown program for the S-IVB has been delayed because of problems with the lox recirculation pump (PESCO). First test of this series was to be conducted on 1/7/65; however, due to the pump problems no tests had been accomplished as of 1/14/65.

NOTES 1-18-65 HOELZER

B 1/25

1. REDUCTION IN COMPUTER RENTAL FUNDS:

This week, NASA Headquarters directed a $994 thousand decrease in the FY-66 budget for rental of computation equipment presently on lease and requested we support the reduced figure of $6.013 million instead of the $7.007 million which we submitted in the budget last Friday.

Computation Laboratory had two alternatives in complying with this adjustment:

a. To reduce extra shift rentals which would, in effect, reduce our present capacity.

b. To transfer the rental of selected equipment to the R&D budget. This we have done.

Hans Maus Request your opinion B

NASA Headquarters has opposed paying computer rentals unless directly R&D related with R&D funds in the past. However, FMO and NASA Headquarters agreed by phone on December 23, 1964, that it might be necessary.

Such a move poses the problem of continued transfer of AO funded rentals and support contracts to the R&D budget as future AO cuts occur. If R&D funds are withdrawn locally by Saturn contract overruns, the Computation Laboratory operation could be jeopardized.

2. SOUTHEASTERN SIMULATION COUNCIL MEETING: Mr. George E. Prince, Jr., of the Simulation Branch presented a paper, "Simple Digital Techniques Applicable to Analog Computation" at the Southeastern Simulation Council Meeting at the Martin Company, Orlando, Florida on January 11, 1965. This meeting was attended by representatives of simulation facilities throughout the southeast. ✓

3. TABAKA STUDY: We agree with Dr. Haeussermann's note of 12/28/64 and Lee James' note of 1/04/65 that the Tabaka system is a lot of unnecessary work. We see little or no gain for our Laboratory from this exercise.

Our top people have spent many hours trying to get the point across that a heavily oriented contractor-type operation such as ours does not fit the standard factors on which the study assigns degrees, that in turn determines grades. We have been unable to agree on many important points and it is our feeling that the lack of technical understanding of computer work on the part of the people making the survey cannot be reconciled with the importance that their decisions can have on our grade structure. We, for example, want to see how they are rating similar jobs in other laboratories before we agree that their opinions are reasonably applied in our case. We are being asked to sign off on job descriptions that will be compared with standards before we know what the standards are. They have consistently avoided agreement to this, or to divulging the weights which they will apply to degrees and factors. We have no confidence in the study and suggest a thorough discussion of the whole approach at an appropriate level; for example, the R&D Council Meeting.

NOTES 1/18/65 JAMES B 1/25

PEGASUS:

Pegasus "A": Satisfactory test and checkout of Pegasus "A" in Hangar D and mating of spacecraft with service module and S/M adapter in Hangar AF were completed 1/12, with no significant discrepancies. Spacecraft was erected and mechanical connections made 1/13. Electrical mating of spacecraft, IU and Blockhouse GSE completed 1/14. Ringout of interfaces and cabling in progress.

Radiation Test at Ion Physics: Reference your question on 1/11/65 Notes - Ion Physics checked machine and determined it was not operating properly. There was intermittent loss of voltage and current control. They disassembled elements of the machine, replaced some components and are currently running recalibration tests. FHC and Ion Physics reviewed connecting circuits between hit amplifier box, test instrumentation and electronic accelerator and discovered discrepancies in current rate resistance, etc. FHC is participating in recalibration tests. A meeting between Ion Physics, FHC and Bill Johnson is scheduled for 1/18. If test configuration then appears satisfactory and no additional indications of malfunction, FHC will resume testing 1/18 p.m.

S-IVB GROUND CUTOFF COMMAND FOR SA-201 & 202: Reference your question on 1/11/65 Notes - Cutoff command would be on emergency standby basis in event launch vehicle failure results in situation that would prevent successful recovery of spacecraft. In reviewing January revision of Flight Mission Assignments Document, primary launch vehicle objectives in order of priority were submitted to OMSF. These state launch vehicle guidance cutoff is mandatory objective for SA-201. This item will be discussed in next Flight Control Operations Panel. MSFC will conduct detailed investigation of ramifications of situation prior to meeting in preparation for discussion with MSC. (MRAZEK)

SA-9 PRELAUNCH REVIEW: This review is tentatively scheduled for February 3 at 9:00 - 11:00 in the Center Conference Room.

MISSION DIRECTOR FOR SA-201: Rip Bollinger, Col., USAF, has been named for SA-201 Mission Director under Christensen.

SATURN IB/CENTAUR: E. Z. Gray has requested that MSFC submit to Headquarters by 1/27 the MSFC Proposed Management Plan including names of personnel to fill the various management positions.

Based on Headquarters guidance, a TWX was sent to Lewis Research Center on 1/15 with specific questions on Centaur which MSFC needs in preparation of Project Development Plans. E. Z. Gray is at LeRC today and plans to request that MSFC's questions be answered.

IBM MISSION CONTRACT: Negotiation is proceeding on schedule for a 1/29 contract submittal to Headquarters for approval. Cost negotiation is complete and burden negotiation is to be complete on 1/18. Fee and incentive negotiation is to begin on 1/20 and end 1/22. Contract preparation and review will take place 1/22 to 1/29.

Attachment #1: (Notes 1/11/65 James) copy to Dr. von Braun only

NOTES 1-18-65 Koelle B 1/25

No NOTES this week.

NOTES 1-18-65 KUERS B 1/25

1. S-IC Problem Areas: Although we are still confident to meet March 1 for -T delivery to Test Laboratory, there are still a number of critical areas which require high level attention at MSFC and Boeing, and which make the control of schedule sometimes difficult. Here are a few examples.

Dieter Grau
Request your comments. How come? B.

a. Development of valves is an area of great concern. Delivery of valves to us is accomplished in time to support our schedules. However, an excessive number of valves are being rejected by QUAL Laboratory after receipt, requiring repairs at our valve clinic or return to the vendor. All of these valves have passed functional acceptance tests at the vendor places. A total of 64 valves for -T has been rejected now and are not available for assembly. I think it is very important to improve the reliability testing; however, I feel that hardware, procured to support an assembly schedule, should not be used for qualification or reliability testing and thus affect our schedules in an unpredictable manner.

b. Approximately 200 brackets are being added to -T by shop sketches (Boeing Liaison Engineering, in Building 4705). Of these 200, there are 106 different configurations. Much of the cable installation is dependent upon these brackets.

The Thrust Structure is again the pacing item for S-IC-1. Engineering changes (CAM's and EO's) are the major cause for delays which are in the order of 4 to 6 weeks for the Plan VII Recovery Schedule. In order to minimize schedule impact, we have agreed with The Boeing Company that this Thrust Structure be shipped from Michoud incomplete by January 21, i.e., approximately on schedule. Boeing will then complete the modifications--more than 500 EO's are yet to be incorporated, amounting to approximately 2500 hours of assembly work--with their personnel in our shop. QUAL Laboratory will perform final acceptance here.

2. S-IVB Common Dome Mating: A meeting was held last week with DAC and S&ID at Seal Beach to familiarize DAC manufacturing and design engineering personnel with the current S-II bulkhead fabrication techniques. The purpose of this meeting was to stimulate DAC to study the application of this automated fitting technique--possibly in a simplified manner--for the S-IVB common bulkhead.

NOTES - 1-18-65 McCartney

B 1/25

1. POP 65-1: All laboratories have submitted their requirements to R&D Operations for review. Machine processing of data is being initiated for POP 65-1. Negotiations with IO will begin about January 18 for the refinement of the remainder of this years' program and a closer review of the FY-66 R&D Operations effort in support of IO. ✓

2. STATUS OF FY-65 R&D OPERATIONS PROGRAM:

(Dollars in thousands)

	ANNUAL PLAN	INITIATIONS	BALANCE	% INITIATIONS OF ANNUAL PLAN
SATURN I	$ 17,703	$ 11,842	$ 5,861	67
SATURN IB	37,284	20,085	17,199	54
SATURN V	135,041	82,683	52,358	61
SUB-TOTAL	$190,028	$114,610	$75,418	60
SR&T	$ 22,622	$ 14,034	$ 8,588	62
ADVANCED STUDIES	10,350	0	10,350	0
SUB-TOTAL	$ 32,972	$ 14,034	$18,938	43
TOTAL R&DO PROGRAM	$223,000	$128,644	$94,356	58

When can we expect release of these funds? B

3. PERFORMANCE EVALUATION PROCEDURE FOR SINGLE SUPPORT CONTRACTS: The MSFC plan for establishing the Incentive Award Fee for the Single Support Contracts which you approved and signed Thursday was forwarded to NASA Headquarters. R-RM is now in the process of developing the detailed schedule of reviews and the implementing actions and procedures for determination of the incentive fees earned. This effort will involve key individuals from each Laboratory and will require considerable supervision and administration from the R-DIR level as these contracts are finalized and put into effect. Details of this effort will be made available to members of the various evaluation Boards within the Laboratories and their supporting personnel. It is also planned, in conjunction with Purchasing, to brief the selected contractors on this approach. ✓

NOTES 1/18/65 RUDOLPH

B 1/25

1. Presidential Scientific Advisory Committee (PSAC) Meeting at S&ID/NAA on January 11-12, 1965 - The scheduled NASA-S&ID/NAA presentation to the Space Technology Panel of the Presidential Scientific Advisory Committee was made on January 11-12, 1965 at S&ID/NAA. In general, the Panel was favorably impressed with the Reliability Program presented. Their main concern seemed to be the statistical approach in demonstrating the reliability goals established for the Saturn V (S-II) and Spacecraft Hardware.

2. S-IC Stage - R-QUAL Test and Checkout Station - The Control Room is approximately one-third complete. All of the installation hardware and approximately one-third of GSE equipment have been received. Essentially all installation hardware and GSE for the Telemetry Room have been received and installed. The equipment verification testing is approximately sixty (60) per cent complete. The RCA 110A computer (pacing item in activation of the Control Room) has been delivered and installation has started. The schedule calls for completion of installation and turn over to MSFC by January 24, 1965. It is believed that this date can be met without difficulty. Approximately ten (10) per cent of installation equipment and GSE for the Test Cell is in-house and has undergone verification tests. The hook-up of pneumatic pressure test racks to the aft stage equipment platform is an example of the pacing items in this area. Based on current information, approximately eighty (80) per cent of the equipment on order is due in the next sixty (60) days.

3. S-II Stage Design Reviews - Three S-II Stage design review packages (Slosh and Vortex System, Engine Compartment Conditioning System, and Ullage Motor System) have been received and distributed for technical review. Design Review Meetings for these three reviews are scheduled for the last week in January and first week in February.

4. Douglas Aircraft Company (DAC) Management visit to MSFC - DAC representatives will visit MSFC next week to present the DAC plans on the S-IVB High Force Dynamic Test Program. Also, DAC representatives will visit MSFC to discuss their new Task Plan approach to Program Management and plans for conversion to incentive contract.

A.R.,

→ What's that?

B

NOTES-1-18-65-SHEPHERD

No Notes

B 1/25

NOTES 1-18-65 Stuhlinger

B 1/25

1. PEGASUS REVIEW TEAM: The Team held a three day meeting here. Two and one-half days were devoted to presentations on the status of Pegasus; a status appraisal was then written for Dr. Bisplinghoff and Dr. Mueller. Milton Ames was present during most of the meeting. I believe that you have seen the report, and that you received verbal comments from several sources. If you desire more information, please advise.

E. S., All I want to know now is how B & M (Ray B. George A.) finally settled the SA-9 question! B

2. RESEARCH ACHIEVEMENTS REVIEW MEETING: Preparations are proceeding on schedule for the series of monthly presentations on Research Achievements. First meeting January 29 will cover Thermophysics and Energetic Radiation Studies at MSFC.

3. ART/SRT PROGRAM STATUS: The current status of the FY-65 ART/SRT Program under the cognizance of RPL is, as of January 15, as follows:

	ANNUAL PLAN	AUTHORIZED	PROCESSED TO FMO	OBLIGATED
OMSF	19,000,000	12,777,000	10,202,531	107,099
OART	9,729,000	6,954,000	5,555,775	2,109,216
OSSA	475,000	475,000	18,671	0
	29,204,000	20,206,000	15,776,977	2,216,315

4. APPROVAL OF MSF FUNDS FOR AES STUDIES: Mr. E. Z. Gray, through J. de Fries' office, approved $1.085 million of Supporting Development funds for the AES lunar surface scientific instruments studies for which RPL is responsible. The following tasks are involved:

Lunar Drill	600K
Subsurface Probe	100K
Emplaced Scientific Station	200K
Environmental Effects on Instruments	145K
Optical Sensors	40K
TOTAL	1085K

Work statements for these tasks have been under preparation for sometime. (J. Downey). Additional AES fund approval in the Advanced Studies category is expected soon.

5. SUPPORT FOR AES STUDIES FROM DR. SHOEMAKER: Drs. Schmitt and O'Connor of the U.S. Geological Survey in Flagstaff (Dr. E. Shoemaker's institute) have been working at RPL this week in support of our LEM/Shelter scientific mission planning work. In particular, they provided comments and suggestions in connection with instruments and experiments to be employed for sample selection procedures. Our relations with Dr. Shoemaker's institute have been very excellent since their beginning; they proved most beneficial in our AES scientific missions planning program.

6. PROGRESS OF METRIC SYSTEM (SI): The second printing of the report "SI Units," by Dr. E. Mechtly, will be released February 5. Milton Cummings has authorized one of his men to travel and lecture on SI Units at Brown Engineering Company's expense.

Jan 25, 1965

NOTES 1-25-65 BELEW B 1/26

J-2 ENGINE

Evaluation of the gas generator, engine hot alignment, extended fuel lead, and engine restart are present test objectives with R&D engine J015. Activation of vertical test stand 3A is scheduled for January 23, 1965, with R&D engine J009-2. R&D engine J016 has arrived at VTS-3B for installation and an activation firing in mid February 1965.

Acceptance testing of production engine J2007 has been temporarily interrupted due to failure of the gas generator spark plugs. The spark plugs were not the latest design configuration. The gas generator will be repaired and the new design spark plugs will be used for the next test.

Production engine 2013, the first flight configuration engine for S-IVB Battleship testing, was accepted by MSFC on January 20 and will be delivered to DAC/SACTO today.

RL10 ENGINE

All six RL10 engines on S-IV-10 operated satisfactorily during the 8-minute static firing on January 21. Preliminary look at the data indicates all performance parameters were in spec. valves.

Development of the A3-3 uprated version of the engine is still proceeding on schedule. A total of 77 firings representing 14,500 seconds of operating time have been accomplished on three active A3-3 engines to date.

H-1 ENGINE

The malfunction and limits testing phase of engine qualification is underway and progressing satisfactorily.

F-1 ENGINE

Engine F-2003 for S-1C-T stage was delivered to MSFC on January 20, 1965.

Engine F-1002-2 accomplished a full duration firing using a Block II (flight type) injector, a Block II gas generator and an alcohol-water solution on January 20, 1965, at MSFC on the West Side Tower. Previous injector cracking at MSFC has been with a Block I injector in a Block I (non-FRT type) engine, and sodium nitrite prefill. In the two tests of this series, no cracks have been detected but additional testing is required to establish if the problem has been alleviated.

GENERAL

We had a meeting last Monday with Rocketdyne (both McNamara and Gene Brown were here) to start working out a compressed schedule for incentivising both our R&D and Production Contracts.

Lee B.

Have we made progress with the J-2 propellant mixture ratio shifts?
I understand the plan to apply PMR shifts from lox-rich to lox-poor on Sat IB - SIV B and on Sat V - SII in addition contingent on successful shift tests resulting in no overshoot and no hunting.

B

NOTES 1-25-65 CLINE B 1/26

1. S-I-9 PROPELLANT LOADS REDUCED: An increase in the SA-9 payload capability (by 500 lbs.) was determined after refinement in the S-I-9 Propulsion performance prediction. Since the SA-9 payload weight is fixed, 22,000 lbs. of LOX was removed from S-I-9. This will reduce the possibility of retaining excessive propellant residuals in S-IV-9 that might cause orbital venting disturbances. ✓

2. SUCCESSFUL J-2X ENGINE TEST CONDUCTED: The third test on J-2X 001 had a duration of 2.97 seconds; scheduled cutoff was initiated by the mainstage timer. The primary test objective was to evaluate the secondary buildup characteristics of the engine while operating on bootstrap power. The engine achieved approximately 84K at cutoff, 60% of rated thrust for ground tests. ✓

NOTES 1/25/65 CONSTAN

B 1/26

1. S-I/IB

Status of S-IB-1 - Overall functional testing is approximately 85% complete. The first four engines have been received for S-IB-1 from Rocketdyne, Neosho, after LOX dome retrofit. Receiving inspection is in progress. ✓

Status of S-IB-2 - Installing routing and wrapping cables in all areas working modifications and installing 60^0 shroud, megger check of cables on fuel tanks 2 and 4. All S-IB-2 outboard engines have been shipped to Rocketdyne, Neosho, for LOX dome retrofit. ✓

2. S-IC

"501" Thrust Structure - The "501" thrust structure and the forward skirt for "S" have been loaded on barge and have left for Huntsville. ✓

Welding - Boeing welding is greatly improved in that the last bulkhead completed had a total of only six defects requiring repair for the eight meridian welds. Improvement in quality is surprisingly enough associated with a reduced manufacturing time. During the period when Boeing was unable to obtain satisfactory bulkhead welds, approximately fourteen hours were required to set up and make one weld. On the aforementioned bulkhead, the last two gore welds were completed in one eight-hour shift. Much of the credit for this improvement is attributed to the Manufacturing Engineering Laboratory personnel who came down to Michoud to help resolve existing problems. ✓

W. Kuers
FYI B

S-IC Quarterly Review - The S-IC Quarterly Review will be held at MSFC/Michoud on January 27-28. The first day will be devoted to management and program discussions; the second day will be devoted to status of technical review. ✓

B 1/26

NOTES 1-25-65 DANNENBERG

1. Configuration Management - At request of KSC, a meeting between OMSF, KSC, & MSC representatives was held at MSFC on 1-20-65, to discuss an Apollo standard engineering drawing release and numbering system. Both MSC and KSC have no standard and are considering to adopt the MSFC system. Our system does not agree with the part numbering provisions of NPC-500-1 (Config. Manual) and may require some changes, before an Apollo standard is adopted. ✓

2. Interface Control Documentation (ICD) - Compatibility study between Apollo and Saturn ICD procedures indicates deficiencies, but no real conflicts. Primarily needed is a center-wide procedures document consistent with NPC 500-1 and NPC 500-6, which is being generated. ✓

3. Data Management - Mr. Sorensen presented to a joint meeting with IO, R&D Operations, and other MSFC representatives the problems of DATA receipt, reproduction, and distribution. After discussion in the meeting, it was resolved that IO (Stone, Goldston) will define actual IO requirements to R&D Operations, especially under consideration of final plans for Configuration Management. R&D Operations will undertake immediately studies to simplify and streamline in-house data requirements; the goal is exclusive usage of microfilmed documents, utilizing the most modern storage and data retrieval equipment. ✓

4. Crew Safety - An MSFC position on "open loop" vs "closed loop" EDS for flight test was established, and MSFC will accept a "closed loop" EDS on SA 202 if MSC agrees not to employ ground initiated abort. It was also decided to delete as EDS requirement automatic shut down of all engines on the S-II stage when two or more engines fail. Although still a valid operational requirement, this should not be included as a special EDS function. ✓

I.O. Request your comment B

5. Saturn S-IVB Stage Reliability Program Cut - DAC announced that upon direction from IO, FY-65 funding for the S-IVB Reliability Program has been reduced by 50%. As a result, no more Reliability personnel are being hired; GSE design review effort has been curtailed; and the total FMEA (Failure Mode and Effect Analysis) activity must be reduced. R-QUAL strongly questions this action since it feels this will adversely affect the program. R-SA supports the R-QUAL position.

6. Liquid Hydrogen Experiment - Two sets of TV equipment are needed for the LH_2 experiment. This equipment can be obtained as surplus from the Ranger Program. Availability and utilization of this equipment is being checked with JPL and OSSA. ✓

NOTES 1/25/65 FORTUNE

B 1/26

1. Move to the Laboratory and Engineering Building - commenced on the 20th with approximately 50 MSFC-MTO and GE employees being relocated during the week. The North and South wings were accepted for use on the 18th with other parts following as completed. Our Headquarters is now located in the Building. Bill Eaton will move his office in during the week of the 25th. ✓

B 1/26

NOTES 1/25/65 GEISSLER

1. (C) January Saturn IB Performance: January current performance for Saturn IB R&D and operational vehicles was transmitted to I.O. The 105 na. mi. circular orbit payload capability of each vehicle and payload change from last month is: SA-203: 32,680 (+330), (This 32,680 not pertinent to orbital hydrogen mission currently planned for SA-203); SA-204: 33,920 (+370); SA-205: 34,650 (+430); SA-206 & SUBS: 34,770 (+430). These payloads reflect the new S-IB and S-IVB mean residuals philosophy and flight performance reserves of 1520 lbs. The major contribution to the reduction of the FPR was a reduction of the S-IB stage 3σ mixture ratio tolerance.

2. (C) January Saturn V Performance: January current performance for Saturn V R&D and operational vehicles was transmitted to I.O. The 72 hour translunar injection payload capability of each vehicle and the payload change from last month is: SA-501: 87,025 (+638), (This 87,025 not pertinent to reentry mission currently planned for SA-501); SA-502: 87,287 (+631); SA-503: 87,610 (+583); SA-504 & 505: 98, 091 (+1225); SA-506 & SUBS: 98,843 (+1214). These payloads reflect an S-II stage mixture ratio (5.5 and 4.7) programmed to maximize injected payload. The PMR for SA-504 and subsequent was constrained due to capacity loadings of the LOX and hydrogen tanks. J-2 engine thrust (EMR = 5.0) for the S-II and S-IVB stages has been reduced from 207,000 lbs to 205,000.

3. Removal of Saturn IB Engine Shrouds: The need for engine shrouds has been reviewed with respect to aerodynamic loads and hinge moments on the engines. Agreement to remove the shrouds has been obtained from all parties involved, and formal request to I.O. is in preparation. Shrouds weigh 1,140#. Their omission will yield a 150# payload gain for Saturn IB. A proposal is being made to fly SA-10 without shrouds.

4. Saturn IB Lifting Trajectory: In the past, trajectories for Saturns were shaped for zero angle of attack (gravity turn) throughout first stage flight, which generally minimizes the external forces acting on the vehicle thereby alleviating structural and control problems. Aero has been investigating the feasibility of flying a gravity turn profile up through max q and then flying at an optimum attitude (commonly called lifting trajectory) for the remainder of the IB flight. On Jan. 21, 1965, a meeting was held to discuss feasibility of flying the IB lifting trajectory. R-AERO's preliminary analyses indicate that a IB payload gain of about 550 lbs. can be achieved without structural beef-up. P&VE and ASTR were brought on-board and will continue the investigation to determine if there are unforseen problems introduced by flying this trajectory. Similar analyses are being conducted for the Saturn V and will be discussed some time in March, 1965.

NOTES 1-25-65 GRAU

B1/26

1. PEGASUS PROGRAM: Generally, progress in qualification testing of Pegasus components has been excellent recently. There is concern, however, about the lack of activity in the RFI area. To date, no in-house Fairchild components have passed RFI component testing. Difficulties encountered in the past with the Data Sub-System accent the need for accelerated activities in this area.

2. S-IV PROGRAM: The S-IV-8 stage has completed Simulated Flight Tests in post-static checkout at Sacramento and is at present undergoing some minor rework in the Engineering and Development Building at Sacramento. The stage is presently ahead of schedule and will not be shipped to Kennedy Space Center until approximately February 20, 1965. The S-IV-10 stage was successfully static fired January 21, 1965, at Sacramento. This marks the end of static firings for the S-IV stages.

3. GOVERNMENT AGENCY QUALITY ASSURANCE COSTS: The following government agency quality assurance costs for the months July through November, 1964, have been verified to date:

Saturn I	170,535.00
Saturn IB	18,644.00
Saturn V	506,811.00
Pegasus	7,486.00
RL-10 Engine	19,435.00
Other Engine	196,656.00
TOTAL	919,567.00

These are not complete billings for the months, but are indicative of the distribution and magnitude of the effort.

4. MISSISSIPPI TEST FACILITY (MTF): NAA/S&ID has begun to ship GSE to MTF. The S&ID quality organization is scheduled to go to MTF February 5, 1965.

NOTES 1/25/65 HAEUSSERMANN B 1/26

1. 500 FS CONTRACT WITH DAC: The contract to test the S-IU-500FS at DAC was agreed to 1/21/65 between MSFC Contracts Office and DAC. DAC had originally bid $2.995 million plus fee to perform the test; whereas, MSFC evaluation of the job indicated a price of $1.99 million plus fee would be adequate. The final agreed figure was $2.49 million plus fee. Even though the contract will have to go to NASA Headquarters for approval, MSFC Contracts Office has included a clause whereby DAC is authorized to incur costs as of now. The schedule which indicates start of testing on 12/6/65 was agreed to by both MSFC and DAC.

Wit. Can we have launching SA-201 prior to availability of at least some of the test results from Huntington Beach? B

2. EMC SUB-PANEL MEETING AT MSFC, 12/15-16/64: Electrostatic phenomena on missiles and space vehicles was highlighted in the December meeting of the EMC (Electro Magnetic Compatibility) Sub-panel of the Instrumentation and Communication Panel. The following data was presented by NAA personnel as results of studies and analyses. Items b and c pertain to the Apollo Launch Vehicle configuration. Verification of this data will be made by ASTR.

a. Electrostatic phenomena has contributed to at least two rocket failures.

b. The vehicle will charge to between 1 x 10^6 and 4.67 x 10^7 volts at the time of S-IC cutoff. The charge is primarily caused by engine operation. During the period from launch to first stage separation, the following phenomena may be expected.

(1) Corona discharge, with attendant RFI.

(2) Streamer discharge from insulated surfaces.

c. At the time of LET and S-IC separation, potential equalizing discharge between the separating segments may be expected, producing the following deleterious effects:

(1) Production of dangerous X-ray levels within the spacecraft.

(2) Plasma oscillations of 10^{16} watts for 10^{-10} seconds containing broadband spectral energy of 0.5 x 10^9 watts/KHz. (1150 V/M/KHz.)

(3) Internal to external arcing with current density approaching 7.1 x 10^4 A/MM^2.

(4) Mechanical damage, including pitting, pinholing, and fracture of thin structure components and fasteners.

This new information has been disseminated to all elements of MSFC concerned for evaluation and necessary corrective action.

Wit. Request a 90 min briefing on whole subject. Suggest to invite suitable group of MSFC attendees. In former times, charge build-up by engine operation was elegantly avoided by sticking white-hot jet vanes into jet, which act as glowing discharge cathodes. Any stick of graphite or molybdenum pointing into the jet does the same thing B

3. DEPARTURE OF PERSONNEL: The following letter was recently sent to The Personnel Office by a GS-9 Electrical Engineer, who joined ASTR 8/61 and last promoted in 9/63. The saluation was Gentlemen:

"The promotion policies at MSFC have become so critical, and with no apparent change in the near future, that I feel forced to make inquiries as to the possibilities for employment in private industry. I have given this matter much thought, and it is with deep regret that I have to consider other employment; but I have an obligation to my family to seek a position where the opportunities are not so limited. This letter should not be misconstrued to be either a letter of resignation or a declaration of dissatisfaction with my present position."

The letter expresses the general feeling in the laboratory and indicates the morale climate that prevails. My concern (beyond the immediate impact) is that this is very likely the first of many to follow, the end result being that we lose the type, caliber and young personnel that were planned to be the backbone of the organization 3, 5, or 7 years from now.

NOTES 1/25/65 HEIMBURG B 1/26

1. S-IVB: Engine 2003 was removed from the Battleship on 1/20/65. Engine 2013 (flight type) to be received at DAC on 1/27/65, and installation of the engine to begin on 1/29/65.

2. S-IV: The static acceptance firing of the S-IV-10 was accomplished on 1/21/65, for approximately 480 seconds (full duration). No major discrepancies were noted during the firing.

3. F-1 ENGINE (F-1002-2): Four tests were conducted during the week, TWF-043 on 1/19/65, with a duration of 28.26 seconds. Cutoff occurred when a transducer common plug vibrated loose giving an erroneous indication that the lox pump bearing jet pressure exceeded the redline.

TWF-044 was conducted on 1/20/65, with a duration of 124.45 seconds. This was a successful test with all objectives obtained.

TWF-045 was conducted on 1/21/65, with a duration of 121.52 seconds. This was also a successful test with all objectives obtained.

TWF-046 was conducted on 1/23/65, with a duration of approximately 34 seconds. Cutoff was given when the fuel pump balance cavity pressure exceeded the redline. Post-test inspection revealed that this was a transducer failure and that the redline really had not been exceeded.

Test TWF-047 is scheduled for 1/26/65, and if successful will be the last test on F-1002-2.

4. WEST COAST BARGE ORION: The barge left San Pedro, California, for sea trials 1/20/65. The barge's stabilizers were tested and performed satisfactorily per gyro level indicator.

North American's S-II "road" transporter was then loaded aboard and secured. On 1/21/65, the barge departed for Port Huneme. While enroute all machinery pumps, anchoring gear, etc., were satisfactorily tested per MARAD procedures.

NOTES 1-25-65 HOELZER B 1/26

1. AUTOMATIC CHECKOUT SOFTWARE:

We have made arrangements through Astrionics to send a man this week to RCA to study and bring back the software package to be provided by RCA for the 110-A computer. This software delivery is approximately two months late as was delivery of the first machine to MSFC.

A committee has been formed representing all pertinent MSFC organizations to review the advanced ATOLL progress. ATOLL specifications have been reviewed with Quality and Test Laboratories and a presentation was made to these Laboratories on FATAL II (a Fault Isolation Language which may form some basis for the study of an advanced ATOLL).

2. IT&T CONTRACT CONCLUDED:

A six months contract with IT&T is to be concluded next week (January 28, 1965). IT&T furnished personnel for training and to supplement our Techniques Unit with systems support. This contract proved very profitable in that communication switching and remote teleprocessing is a relatively new field. By supplementing our efforts with this contract, we gained the time to train our people in this area and prevented bringing additional personnel on board for the new requirement.

3. 1410/7010 OPERATING SYSTEM:

A software operating system is being implemented which will control the processing (compile, test and production runs) on the computer. A reduction in setup time between jobs and more effective utilization of a greater percentage of available time will be realized. Advantages, other than reducing the amount of manual intervention in processing, will be as follows:

a. Compilers and sorts are faster than those presently utilized.
b. Offers a canned teleprocessing supervisor.
c. Simplifies operations.
d. Offers a resident input/output control system which makes corrections to this area immediately effective for all object programs without recompiling.
e. Aids debugging of programs.
f. Offers a compile and go option which means a program can be compiled and executed in the same computer run with no off-line operation.

The target date for complete conversion of all programs to the operating system is March 15, 1965.

NOTES 1/25/65 JAMES B 1/26

SA-9: Checkout of SA-9 is continuing on schedule. RF compatibility tests were satisfactorily completed 1/21. Major milestones remaining for Pegasus are: (1) Complete vehicle plug drop test, 1/25; (2) Range station calls, 1/29; (3) Systems overall plug-in test, 2/5; (4) Data acquisition simulation test, 2/8 and (5) Countdown demonstration, 2/12. ✓

PEGASUS: A meeting was held 1/19 at Ion Physics to review the status of recalibration of Ion Physics Van der Graaff and FHC equipment. Testing had shown the machine was producing some electron bursts large enough to produce spurious "hit" indications. Improvements in test set-up had been made but there was still evidence that pulsing in machine was being picked up by the panel. A series of tests have been defined in an attempt to determine extent of machine interactions with capacitor data. These tests will be completed approximately 1/29/65. ✓

S-IV-10: S-IV-10 was successfully acceptance fired at SACTO on 1/21. It was a full duraction firing of 479 seconds and there were no apparent problems. ✓ This concludes S-IV stage static firing and S-IV-10 post static checkout and completes S-IV operations at SACTO. ✓

SATURN IB DESIGN DATA BOOKS: (MRAZEK) Twenty copies of Saturn IB Design Data Books were forwarded to Air Force Space Systems Division for use in soliciting RFP's for the MOL. We requested a second generation distribution list from the AF Space Systems Division so as to affect the direct distribution of updating material.

S-IVB QUARTERLY REVIEW: The S-IVB Quarterly Review is tentatively scheduled for March 10-11 at Huntington Beach.

DOD CONTRACT ADMINISTRATION SUPPORT: I agree completely with Maus 1/11/65 Notes on this subject. I believe it mandatory that we retain Colonel Hirsch's contract administration people at prime contractor locations. The current modus operandi of contractor personnel physically sitting with Program Office personnel at contractor locations and Huntsville is a very satisfactory method and should definitely continue. ✓

IBM EFFORT AT KSC: A meeting was held 1/19 for KSC to present the scope of work to be included in RFP to IBM. A total of 370 IBM people will be required to support one launch facility for I/IB and two launch facilities for Saturn V. Of these, 130 personnel will be involved with launch facility of I/IB. In general, the scope of work was acceptable. ✓

RCA 110A COMPUTER (Second Procurement); To meet MSFC workmanship requirements, RCA indicated a 3 month delay (beyond current 7 weeks) and added cost of 4.7M. RCA directed to provide MSFC with requirements they can meet and not affect schedules and to phase-in certification of soldering operators and environmental control improvements of module board assembly area. Impact will be provided you after it has been negotiated. ✓

Attachment: Notes 1/11/65 Maus (Dr. von Braun's copy only)

LBM Differ From seems concerned about RF! problems with Pegasus. What are your views on that? B

Doesn't rings a bell What's this all about? B

I agree 100 per cent. Let's dig in and insist that this won't be changed B

NOTES 1-25-65 Koelle B 11/26

1. SEMIANNUAL STATISTICS: The manhour figures are in for the first six months of FY 1965 and the picture in advanced studies (Project 981, NASA Code) is as follows, based on average values:

Equivalent Number of Professional Personnel	125
Supporting Personnel Charging Direct	16
Total (981)	141

The trend is down by about 15 percent from the charges at the beginning of the fiscal year. The breakdown in areas of activities is as follows:

Earth Orbital Studies	7.5%
Lunar Studies	29.4%
Planetary Studies	6.2%
Launch Vehicle Studies	39.7%
Supporting Studies (Cost etc.)	4.6%
Program Management	12.6%
	100.0%

Overtime charges are 4.25%, as compared to about 7.5% centerwide.

7.1 percent of the time charges were related to pure inhouse studies, particularly the "Venus Flyby" study and the development of a "Space Program Analysis and Evaluation Procedure."

More than 50 percent of the total of 141 equivalent men have worked on two near-term projects:

Apollo Experiment Support
Saturn Improvement Studies

The following trends are observed within the 981 category:

a. Slight increase of activities in Earth orbital studies, lunar studies, and planetary studies.

b. Clear decrease in supporting studies and program management.

c. Constant level of effort in advanced launch vehicle studies, the largest activity of all.

Last, but not least: We have yet to receive the first dollar of FY 1965 study money from Dr. Seamans.

2. MIDTERM REVIEW OF REUSABLE ORBITAL TRANSPORT STUDIES: This week we will be reviewing four contracts concerning studies related to the problem of reusable launch vehicles: GD/A, NAA/SID, Lockheed/California, Boeing. This is a major milestone and promises to be very interesting. These contracts represent a value of about 1.5 million FY 1965 dollars. The final presentations are scheduled for the last week of March here at MSFC. This midterm review should give us all the material we need to draft a good position paper as you requested in a memo to Mr. Weidner on December 18, 1964. We will get busy on that right after our return from this trip. ✓

→ Would like to attend these, if possible. B

NOTES 1-25-65 KUERS

B 1/26

1. S-IC Manufacturing Problems: The intention of my reporting on manufacturing problems is to show with some examples that we are not engaged in a routine manufacturing task in building these stages and to give you a feeling of the degree of extension of the art in manufacturing that we and the Prime Contractors are involved in. At the same time these examples, I hope, might serve to further the understanding why some delays have occurred in our program.

a. Upper Lox Bulkhead for S-IC-501: As reported last year Boeing was building this bulkhead according to contract for us. This resulted in scrapping the complete bulkhead because of mismatch in weld seams. It was cut into segments and shipped to ME for re-welding. We finished this work now; however, utilizing the once welded segments again, we did not produce a quality as desired. The defects of this weld assembly have been waived and the bulkhead declared flight worthy by P&VE and Boeing engineering. In spite of the acceptability we will try to build a new dome for S-IC-1 and swap the just completed head with S-IC-F.

b. Thrust Structure for S-IC-501: This Thrust Structure was shipped from Michoud on January 21. Arrangements have been made for Boeing to begin work on a two 12-hour shift basis, immediately upon delivery to Building 4705. Required support from R-QUAL and R-ME shops has been coordinated. We hope by this arrangement to minimize the schedule impact caused by non-availability of modification parts due to late documentation of CAM's and engineering orders.

c. On request of Boeing we are supporting Michoud in the installation of the Fuel Exclusion Riser for S-IC-D. We are sending four people for a period of two weeks. A successful transfer of knowledge and experience depends always on the good will and attitude of both parties, the giver and the receiver. In this case the stage is set right to guarantee a full utilization of our experience.

WvB: You need not be so apologetic! I think your guys at ME have done an excellent job, not only in-house, but also in your cooperation with our stage primes. B

NOTES 1/25/65 MAUS

B 1/26

1. ADMINISTRATOR'S PROGRAM REVIEW - MSFC representatives scheduled to attend Mr. Webb's General Management Program Review this week, are as follows:

Jan. 25	Agena, Centaur, Scout, Delta	Mr. Cline
Jan. 26	Lunar and Planetary Programs	Dr. Rees
Jan. 27	Repeat Presentation on above	Mr. Williams, Dr. Geissler, Dr. Stuhlinger, Mr. deFries ✓

H.M. Please keep me posted on outcome of action today. B

2. LAUNCH VEHICLE HEARINGS - The Senate Committee on Aeronautical and Space Sciences, Senator Clinton Anderson, Chairman, will hold launch vehicle hearings this week, January 26 - 27. Mr. Webb will testify for NASA and Dr. Vance will testify for DOD. Dr. Seamans and Dr. Brown (for DOD), will be available to answer technical questions. It will be a closed hearing. ✓

3. MECHANIZATION OF BUDGET DATA - For the first time, ADP equipment has been used in gathering and sorting the basic information to go into the budget submission (due in Headquarters Feb. 8). The mechanization process allows the budget data to be more readily presented by laboratory, project, contractor, or any other fashion required for analysis. ✓

Helmuth Hoelzer FYI B

This mechanization is a real step forward in the MSFC Budget System and could not have been accomplished in time for this submission, without the excellent support from the Computation Laboratory.

4. MSF SCHEDULING SYSTEM - Tom Smith and representatives of IO attended the MSF Scheduling Committee meeting in Washington last week. Present plan is to implement a revised MSF Scheduling System, based on PERT, beginning with March schedule submission. ✓

NOTES - 1-25-65 McCart

1. STATUS OF SRT INITIATIONS: As of January 21, status of SRT initiations is as follows:

	PLAN	AUTH. REC.	INITIATED	BALANCE
*MSF	$17,000	$12,500	$10,595	$1,905
OART	14,821	9,674	7,070	2,604
OTDA	2,000	2,000	991	1,009
SS&A	675	675	19	656
	$34,496	$24,849	$18,675	$6,174

* $2 million for the 100-pound thrust engine has been deleted from the MSF plan since the Engine Office has responsibility.

On January 11, $1.7M additional program authority was received from MSF (these funds are included in the MSF totals above); the $1.9M balance is expected to be initiated within 2 weeks.

Last week, $.2M was received for SS&A; about $.35M is planned for initiation early in February. By March 1, procurement actions will be taken to extend SS&A funded contracts expiring in June and July. To date, no authority has been received for advanced studies.

2. SATURN IB/CENTAUR PROGRAM: Action is underway in a joint effort with Joe de Fries, AERO, to develop the resources (Manpower and Dollars) in support of the Saturn IB/Centaur plan. This operation is part of an overall effort now underway to assess the R&D Operations Resources in relation to all possible "new start" projects including the Cis-Lunar Pegasus and the LH_2 experiment. Assessment will consider the Saturn program schedules during the next five years.

3. FY67 CofF PROGRAM: R-RM has worked closely with the laboratories in developing their presentations on the FY67 CofF program which is to be presented today to DIR. The Headquarters' guidelines used in developing the presentations were that projects are to be evaluated against the following facility criteria:

a. Support a currently approved R&D program.
b. Increased technical capability.
c. Replace substandard facilities.

These guidelines indicate a liberalization of Headquarters' attitude toward R&D program requirements as they now include provisions for qualifying types b. and c. (above) facility projects. This is of particular importance since all of the R&D Operations FY67 project proposals fall in those last two categories. The detailed project write-ups within Headquarters guidelines are to be transmitted to MSF during the first week in February.

Mc C. Can you give me a simple breakdown, maybe in matrix form, of the individual projects involved? Without this, these figures are rather meaningless for me B

Frank W. This situation is getting ridiculous, suggest you call E.Z. Gray and ask him what our chances are to get these FY 65 advanced studies funds before the fiscal year expires. B

I talked to McCall & we will take the matter up with Ed G. when he is here on 1/28 Fw 1/27

B 1/26

B 1/26

NOTES 1/25/65 RUDOLPH

1. S-IC Stage - (Reference Notes 12/21/64 Grau, Item 5, copy attached). The S-IC Stage Project Office is aware of the problems connected with the rejection of S-IC fuel tank pressurizing valves. At a qualification status review meeting on January 14, 1965, The Boeing Company stated that the Valve, Fuel Pressurization 60B49002-1 has been subjected to a "whole area of redesign" and the qualification program was scheduled to start January 18, 1965, and be completed by February 28, 1965. If no complications arise, there will be no impact to the -T Program. As a secondary measure, Boeing and P&VE Laboratory have started identifying work around methods for utilizing Saturn I hardware for all S-IC-T valves and bellows which have not yet passed qualification testing. ✓

2. S-II Confidence Development Testing - (Reference Notes 1/11/65 Rudolph, copy attached). S&ID presented the review of their present and proposed supplemental reliability systems test programs as scheduled on January 14, 1965. MSFC Laboratory and IO representatives concurred with S&ID's supplemental test programs, with some modifications relative to Government furnished procurement (GFP) hardware requirements, and test set-ups. To help S&ID establish S-II confidence levels and hopefully, reduce the amount of testing required by the contractor, MSFC agreed to provide S&ID with all available in-house qualification, reliability test, and flight data on MSFC items utilized by the contractor. MSFC, however, will only provide S&ID with one set of GFP which must be utilized for all three test programs, since the programs are in series. Should S&ID feel the agreements of the meeting will result in a degradation in the S-II Confidence Development Plan, they are to present a complete evaluation of the degradation to MSFC. If a briefing on this subject is still desired, we are prepared. ✓ → Not necessary if you feel this disposes adequately of S&ID's prediction that Confidence Level 2 will be attained only with S-II-8, which, of course would be entirely unacceptable B

3. S-IVB Quarterly Review - March 10-11, 1965, have been established as tentative dates for the S-IVB Quarterly Review, to be conducted at Huntington Beach. ✓

4. Instrument Unit - A Quarterly review at Bendix is scheduled for February 3, 1965, to be followed by an IBM review at Owego on February 4, 1965. Emphasis will be placed on the management aspects of the program, with a short period being devoted to current technical status. ✓

5. ESE Mission Contract with General Electric - Contract negotiations for the design phase under NASw-410 has been completed. Submission of this portion of the contract to MSF for approval is targeted for March 1, 1965. Technical proposal for the Fabrication Phase has been received and is being evaluated. Submission of this portion of the contract for approval is targeted for April 15, 1965. ✓

Attachment: 1. Notes 12/21/64 Grau (DIR, I-DIR & R-DIR's copy only)
2. Notes 1/11/65 Rudolph (DIR, I-DIR & R-DIR's copy only)

NOTES-1-25-65-SHEPHERD B 1/26

No Notes.

NOTES 1-25-65 Stuhlinger

B 1/26

1. WEEKLY NOTE SYSTEM: In response to your plea to reduce the number of problems brought to the attention of DIR by having more of these problems handled on the R-DIR level, may I suggest that Labs and Offices write two Weekly Note sheets, a short one for DIR, and a more elaborate one for R-DIR? I believe that the "Weekly Note" system is preferable to an "individual memo" system, because it enables all the Labs and Offices to keep informed of important proceedings within MSFC.

E.S. Misunderstanding! I don't mind having these problems brought to my attention. I only feel that R-DIR should always be called to help resolve them, before I am brought into the act. No. Let's leave the Weekly Note system as it is. I like it. B

2. PEGASUS PROJECT: LaRC offered us hardware components, and participation in an existing LaRC contract, for particle impact testing of Pegasus detector panels at NAA. We are glad to accept this offer and will begin testing as soon as the range has been modified and checked out. The problem is the availability of test panels. Dr. Johnson will furnish us a plan showing the availability of panels during the next weeks and months. I expect that panels will be available around February 10. ✓

3. SELF-PROGRAMMING COMPUTER: Dr. R. Seitz from RPL, with support from Comp Lab, and based on original work done at STL, has developed a "self-programming computer" which permits a scientist to "play" with a computer as he would "play" with pencil and paper, i.e. the scientist need not go through lengthy programming procedures before feeding equations into the computer. Would you like to have a presentation of this computer's functions and capabilities? Yes. 20 min B

How horrible! B

4. OART FUTURE RESEARCH STUDY: On January 20 Mr. John Phillips of OART visited RPL to discuss future requirements for support of the development of space electric power systems and electric propulsion. His study is a part of a much larger review, being conducted for Dr. Bisplinghoff, to define the long term requirements for research in all areas. ✓